The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 23. NO. 36 TULSA, OKLAHOMA, JANUARY 29, 1925

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Production Declines as Prices Increase

Average daily production in United States week ended Jan. 24, 1,969,220 bbls. Loss from previous week, 28,825 bbls.

Wortham Declining Rapidly With Output Early This Week 100,000 bbls. Drilling Activity Increasing

Highest daily average estimated production last year, week ended August 23, 2,057,319 bbls. Lowest January 12, 1,871,143 bbls.

By Andrew M. Rowley

Everyone in the oil business last week certainly had reason to believe there is a Santa Claus. Substantial increases in posted prices for crude oil were announced in every oil field of the country except in California, the Gulf Coast and southwest Texas, the higher prices meaning $313,565 more daily to producers. Any doubt that Wortham might not have reached its peak was eliminated by the rapid decline of production there although a number of wells were completed. Production dropped from an average of 148,000 barrels a day during the previous week to 127,800 barrels a day last week and on Tuesday morning of this week, the output had further decreased until it was approximately 100,000 barrels. And, in connection with these two most important factors in the general situation, crude oil production for the entire country showed a drop of 28,825 barrels a day.

With higher prices for crude already in effect, gasoline prices being advanced in all sections of the country, further increases in both crude and refined oil prices expected, no indications of any material increase in production right at this time, and consumption holding up far above expectations and showing signs of increasing rather than decreasing, it does not require an optimist to see a rosy outlook for the oil business.

That the crude advances of the past week are but a start of what may be expected during this year is the general opinion among operators and others who have made a careful survey of conditions. The fact no increase in price was made in California was not surprising because conditions there have been different than in other areas. It must be remembered that every price change in California last year was an advance while in other sections, decreases were the rule during the latter half of the year. In the Gulf Coast, prices were advanced last November, the quotations at the first of this year being 25 cents a barrel higher than at the first of 1924. In the Southwest Texas fields, crude is sold on a contract basis which takes that field out of the general classification when it comes to price increases.

The extent of the decline at Wortham is shown by the following figures on production of that field for the first three days of this week. The output from 114 wells at 7 o'clock last Sunday morning averaged 116,083 barrels. At the same time Monday it was 107,690 barrels from 123 wells and Tuesday morning it had dropped to 100,378 barrels from 135 wells. Consequently, in three days there was a decline of nearly 16,000 barrels a day although there were 21 more wells producing on the third day. Wortham, however, probably will maintain a good production for a long period after the flush flow is over.

Oklahoma registered a gain of a little more than 6,500 barrels daily due chiefly to further increases in production from the Papoose-Gilcrease Pool. A slight gain was shown in Louisiana and Arkansas but other major producing areas recorded decreases. The crude price advances have already stimulated drilling activity in a number of areas and it is probable several sections which have appeared promising will be tested within the near future.

California dropped to 600,000 barrels during the week. The output of the Rosecrans Field was increased 2,620 barrels a day by the completion of four wells there. In the Dominguez Field, but one well was placed on production and it was not counted as a completion as 160 barrels of fluid had a cut of 50 per cent water. This field is expected to experience considerable development this year and production there may show an increase within the near future.

In the Rocky Mountain area there are a number of sections where good showings have been found and where it is expected commercial production of oil and gas will be developed this year. New Mexico, it seems, is due for a good play while operations in different sections of Utah are being watched with interest.

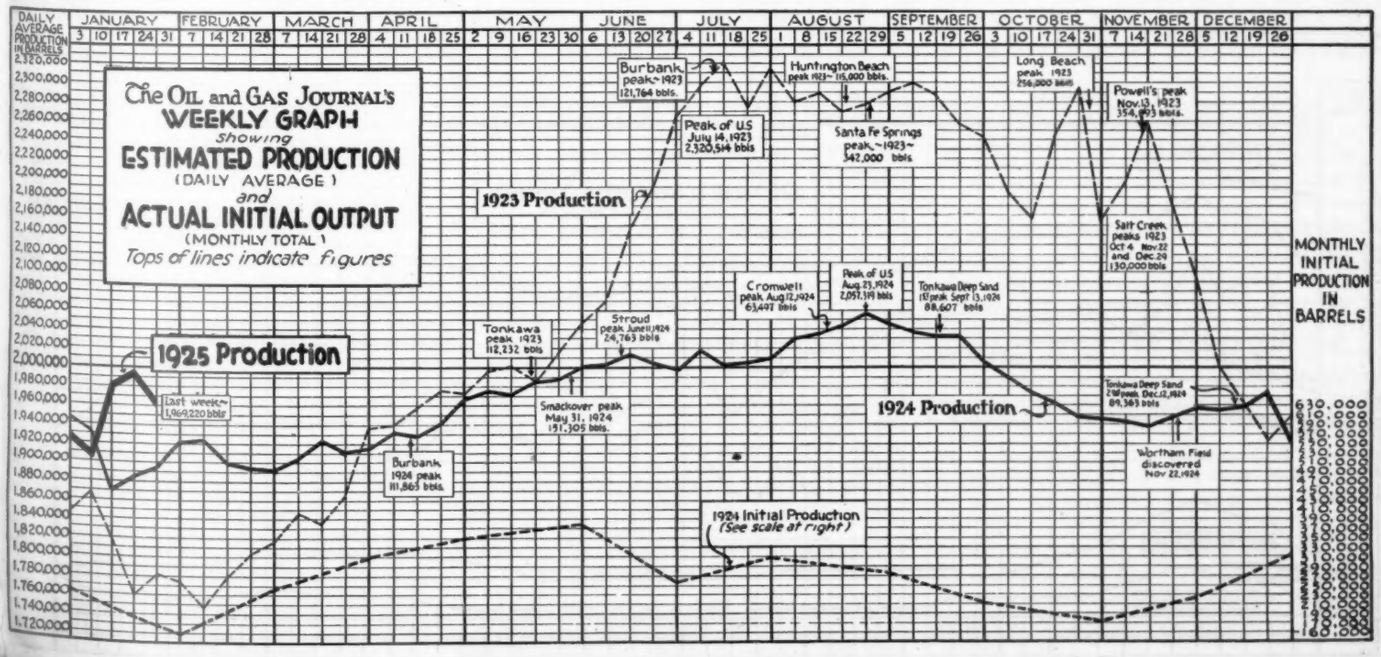
Indications at this time are there will be a greatly increased amount of drilling in all fields of the country within the near future. The spirit of optimism pervades the industry and will be crystalized in the opening of drilling campaigns on a larger scale than was the case last year. That some new fields will be found is more than probable but the industry is getting into a better shape to absorb new production than it has been for two years. The unusually severe winter will retard activity for some time which will be a good thing for the industry as a whole for the longer crude production remains at its present level or lower, the more chance there is prices will go higher and the longer the higher prices will remain in effect.

PRODUCTION IN THE UNITED STATES

Estimated daily average crude oil production in the United States for the week ended January 24, and a comparison with previous week follows:

Oklahoma—Northern Fields:	Jan. 24	Jan. 17
Tonkawa	99,935	99,460
Burbank	59,105	59,300
Other Osage Fields	36,370	35,980
Cushing and Shamrock	23,240	23,200
Bristow and Eastern Bristow	35,405	35,160
Cromwell	31,620	31,170
Papoose	40,380	35,655
Northern Miscellaneous	92,980	91,990
Southern Fields	64,100	64,600
Total Oklahoma	483,135	476,515
North Louisiana	49,850	49,415
Arkansas—		
El Dorado and Calion	9,660	9,690
Smackover Light	31,880	29,855
Smackover Heavy	59,980	61,800
Stephens and Nevada	3,170	3,180
Total Arkansas	104,690	104,525
North Central Texas	124,755	129,480
Powell	59,815	60,750
Mexia, Currie, Richland, etc.	41,620	40,065
Wortham	127,800	148,000
Kansas	82,760	82,650
Total Mid-Continent Area	1,074,425	1,091,400
Gulf Coast	73,740	73,735
Southwest Texas	41,185	45,290
Eastern	98,550	100,200
Rocky Mountain Area	81,320	82,420
California—		
Santa Fe Springs	48,000	49,000
Long Beach	119,000	120,000
Huntington Beach	40,000	40,000
Torrance	43,000	43,000
Dominguez	59,000	61,000
Remainder of State	291,000	292,000
Total California	600,000	605,000
Total United States	1,969,220	1,998,045

DECREASE, 28,825 BARRELS



Sensational Advances In Gasoline

Crude and Tank Wagon Changes Combine to Hasten Upward Trend in Motor Fuel in Oklahoma. Little Change in Other Products

By C. O. Willson

Additional refining and marketing news will be found in the section starting on page 248

Although both had been expected for some time, a combination of a crude advance in the Mid-Continent fields and two gasoline tank wagon advances in the Standard of Indiana marketing territory brought rapid advances in gasolines and at the same time served to upset the Oklahoma (Group 3) refined market generally so that at this writing it is difficult to determine accurately just what are prevailing market quotations. The markets were more settled on Tuesday than on Monday and it is believed that within a couple of days conditions will be still more normal.

However, a majority of the trade believes that additional changes in crude and tank wagon markets will materialize in the near future and if these predictions prove true, developments in refined markets of the past week will probably be duplicated within the next two weeks.

The crude and tank wagon advances just mentioned, together with other changes effective in practically every pool and marketing area east of the West Coast, are explained in the market pages of this issue. Of direct importance in the Oklahoma market was the 25 to 40 cents advance posted by the major purchasing companies on Thursday followed on Friday and Monday by two 1-cent advances in the Standard of Indiana marketing territory. Up to Monday, practically the only shift in refined markets due to these changes was a ½ to ¾-cent advance in gasolines. Fuel oil, kerosenes and distillates in fact continued sluggish and scattered price concessions were reported as late as Saturday. Two companies made changes in one or more grades of lubricating stock but no general advances were announced.

Rapid Advance Monday

The additional 1 cent tank wagon advance on Monday not only brought another ½ to ¾-cent advance in motor fuels but was also held responsible for a better tone in other products. Fuel oil and distillates were generally firm not because of any increase in demand but due to the fact that refiners were offering less material in expectation of better prices. Although there are still conflicting opinions regarding the soundness of the recent changes in markets affecting the entire industry and the probable trends for the future, it can be said that among Oklahoma refiners the doubters are decreasing in numbers and this changing attitude is really the most important single development in the refined market during the past week. Market observers are agreed that, due to weather conditions or other causes, there will probably be lulls and reactionary periods in all products during the next few weeks but these will not bring serious injury to markets provided sellers generally are confident that conditions will continue to improve. The more conservative operators do not subscribe to many of the over optimistic predictions which have been circulated among the trade during the past few days but they are expecting reasonable advances in one or more products they manufacture to largely offset the increased costs of raw material.

The most important effect of the crude and tank wagon advances of the past week has to do with the long time contracts which a majority of the refiners have with buyers. In the case of gasoline based on tank wagon quotations in the Standard of Indiana territory, the sellers absorb the entire 2-cent advance. These contracts for several weeks have been very unfavorable when compared to the prevailing spot market prices averaging around 5½ to 6 cents a gallon ever since the last gasoline tank wagon reduction was announced on September 12.

Effect on Contracts

With the 2-cent advance these marginal contracts are now bringing 7½ to 8 cents and although this is still 1½ to 2 cents a gallon below the prevailing spot market for 58-60 U. S. Motor gasoline, it has been an important aid to several major refiners who sell a substantial part of their gasoline output based on this type of contract. These contracts vary greatly in their terms and the 7½ to 8-cent spread will not cover them all. At least one contract known to the writer is still bringing the refiner under 6 cents a gallon while others are higher than 8 cents. Most of the contracts now netting the refiner under 8 cents are hangovers from agreements entered into with jobbers a year ago. Refiners in most instances have not been so liberal in their margins in new contracts this year with many refusing to take on any contracts not based on the spot market.

In this connection it is interesting to note the workings of a contract which was offered in the fall by one of the largest refiners and contract makers in the Mid-Continent Field. This contract attempted to protect the seller with what was termed the "cost of production" minimum which was obtained by taking 2½ times the cost of crude of 36 degrees gravity crude. This gravity crude is now bringing $1.50 a bbl. in posted schedules. This would mean that 8.92 cents per gallon represented the cost of refining 58-60 U. S. Motor gasoline. This, it will be noted, is approximately 1 cent higher than many contracts based on tank wagon prices and at the same time 1 cent lower than the prevailing spot market.

There are a few natural gasoline contracts based on tank wagon schedules and they also have taken the full advance in the wholesale prices. These contracts generally provide a price to the manufacturer based on a percentage of the tank wagon prices. Prices have been nearer the open market quotations than was the case in straight run gasolines.

Fuel Oil Up

Fuel oil prices based on contracts are now in most instances netting the refiner an additional 15 cents a bbl., this being 60 per cent of the 25-cent advance in the posted crude schedules on which the contracts are based. Late in the fall many of these contracts in Oklahoma were adjusted on a basis of $1 with the seller to get 60 per cent of any advance in posted crude schedules. These contracts are now within 15 to 20 cents of the spot market for the same gravity fuel oils. Of minor importance are other contracts covering gas oil and distillates

(Continued on Page 30)

REFINED MARKET BAROMETER

Stimulated by further crude and gasoline tank wagon advances applying to a majority of the fields and marketing areas east of the West Coast refined markets during the past week were featured with an upward trend in motor fuel prices at the refineries including both the domestic and export markets. In the Middle West and Mid-Continent areas the advance in gasolines at the refineries was especially rapid, the increases for the week totaling from 1½ to 2 cents a gallon on all grades. No change in motor fuel prices occurred on the West Coast although the advances in the eastern areas are reflected in a better market tone there. Fuel and gas oils are strong in all areas with no important price changes. Distillates and kerosenes were generally firm with scattered advances reported. Natural gasoline prices higher in all areas including the West Coast. Many manufacturers of lubricating oils advanced their prices during the week and additional increases are expected soon. Wax prices are higher in all areas.

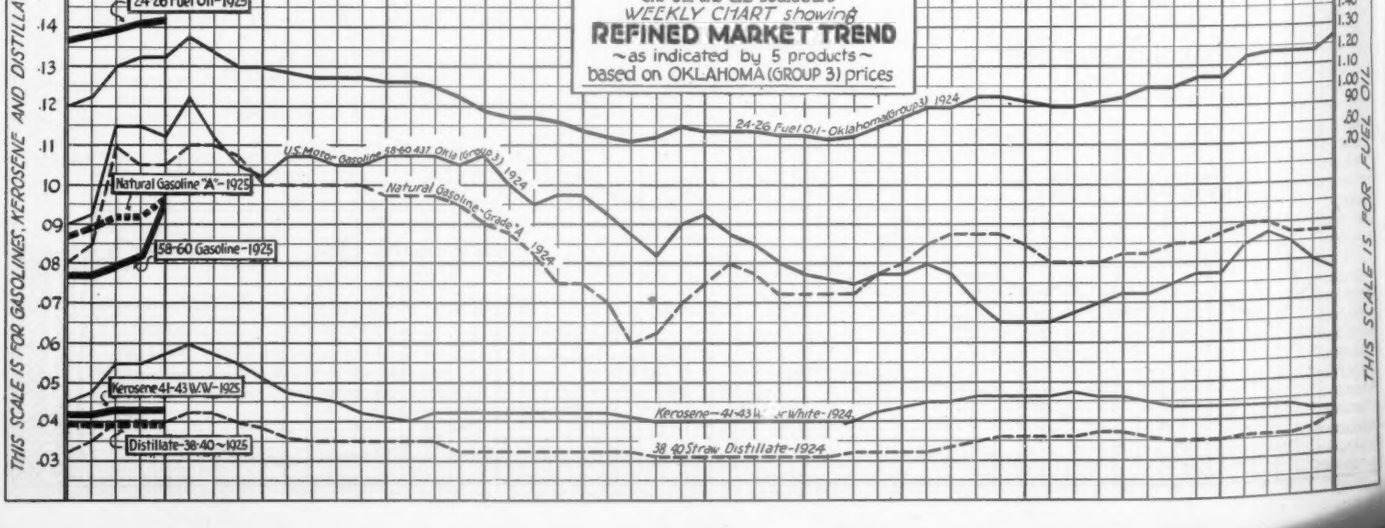
Mid-Continent—Refinery gasolines advanced from 1½ to 2 cents in all areas due to changes in tank wagon and crude prices. Natural gasoline prices from ½ to ¾-cent higher in all areas. Fuel oil, gas oil and distillates strong with scattered advances in quotations. Fair demand for kerosenes with no changes in price. Several refiners advanced prices on cylinder stocks and bright stocks.

Atlantic Seaboard—General tank wagon advances will assure higher prices at the refineries. Export gasoline prices advanced ½-cent and naphtha 1 cent. Gas and fuel oils firm. Kerosene strong. Lubricants firm.

Pennsylvania—Gasoline prices advanced in line with higher tank wagon and crude prices. Little change in kerosene and fuel oils. Cylinder stocks higher in price.

California—No important price changes. Upward trend in Eastern sections aiding West Coast market. Natural gasolines and fuel oils strong. No changes in lubs.

Chicago—Jobber demand for gasolines light, despite higher tank wagon prices. Trade generally waiting for further developments in crude and tank wagon markets. Kerosenes slow. Improved demand for distillates. Fuel oil stronger.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REFINED MARKET TREND
~as indicated by 5 products~
based on OKLAHOMA (GROUP 3) prices
24-26 Fuel Oil-1925
Natural Gasoline "A"-1925
58-60 Gasoline-1925
Kerosene 41-43 W.W.-1925
Distillate-38-40-1925
U.S. Motor Gasoline 58-60 A.S.T.M. Okla (Group 3) 1924
Natural Gasoline-Grade "A"-1924
24-26 Fuel Oil-Oklahoma (Group 3) 1924
Kerosene-41-43 W.W. White-1924
38-40 Straw Distillate-1924
THIS SCALE IS FOR GASOLINES, KEROSENE AND DISTILLATE
THIS SCALE IS FOR FUEL OIL

Crude Price Increases Spell Prosperity

All Branches of Petroleum Industry Benefit. About $476,328,320 Expended in 1924 in Completing 21,894 Wells

By Andrew M. Rowley

Increases in the posted prices for crude oil were announced during the past week in every oil field of the United States except in California, the Gulf Coast and Southwest Texas, netting producers approximately $313,565 a day more for their crude and adding about $81,968,900 to the value of crude oil held in storage in the areas affected by the increased prices. The advances generally averaged 25 cents a barrel. It was the first time this year a general advance has been made in crude oil prices and was the first advance in the Mid-Continent since last September. Details of the different advances, with dates they became effective and the companies announcing the increase, will be found on page 253 of this issue.

The general advance started last Thursday when the Marland Refining Company announced increases in prices where it purchased crude ranging from 33 to 42 cents a barrel. The Prairie Oil & Gas Company, dominant crude purchaser in Oklahoma, Kansas and North Texas, immediately announced an increase of 25 cents a barrel on the various grades of its old schedule and 40 cents a barrel on a new high grade established by it. Then major purchasing companies in the fields in the East, Central West, East Central Texas, Louisiana and Arkansas and the Rocky Mountain area became busy with increases.

Increased Prices Expected

The increase in prices for crude oil had been expected for some time. It was delayed by the discovery of the field at Wortham, Tex., but with the passing of the peak production of Wortham on January 14 and the rapid decline during the following week in that field, posted prices throughout the Mid-Continent Field were raised.

The crude price increase during the past week was almost immediately reflected in higher prices for gasoline, tank wagon and service station prices being advanced in practically every section where crude oil prices were raised.

Operators believe further advances in crude oil prices will be announced within the comparatively near future. They point out conditions warrant further increases in prices as consumption has been increasing and production during the past week showed a substantial decline.

The immediate effect of the higher prices has been to stimulate activity in different sections of the country. Already operators are planning increased development work and it is probable drilling activity will show a material growth as soon as weather conditions permit a full resumption of operations.

While substantial advances in crude oil prices were made about this time last year, only to be followed by reductions and a generally low price average for the entire year, it is felt now conditions during 1925 will be different and that the higher prices will be maintained over a longer period than during either of the past two years. In this connection, it is probable there will be more drilling done in 1925 than during 1924 and a greater amount of wildcatting. The results of this drilling and wildcat activity will have an effect upon future crude oil prices for there is always the possibility of discovering another big field or a new and prolific producing horizon in an old field.

Means Much to Producers

Based on The Oil and Gas Journal's estimate of production last week, the crude price advances brought $313,565 a day more to producers in all fields except California, the Gulf Coast and Southwest Texas. Operators in the Mid-Continent area benefited to the extent of at least $268,000 a day and those in the Eastern, Central West, West Kentucky-Tennessee, and the Rocky Mountain area about $44,965 a day. The boost of 25 cents a barrel for crude does not seem a big thing to some persons but when it is considered the increase affects more than 1,000,000 barrels of oil produced every day, the full effect of each advance can be appreciated.

While producers were getting $313,565 a day more for their oil, the crude held in storage automatically became more valuable from a market standpoint. Based on the latest figures available on stocks of crude held by producers, pipe line companies and refiners in the different areas affected by the crude price advances, this stored crude is worth $81,968,900 more to its owners now than it was a week ago. It is not hard to realize what effect this increased valuation has on the banks of the oil country who have made loans on crude in storage, or on the owners of the crude who have given notes with the crude in storage as security.

Equipment Men Benefit

Crude oil producers and owners of stored oil are not the only ones to prosper as a result of the higher prices. As stated before, the better prices prevailing has already started more drilling activity. Drilling activity means prosperity for supply and equipment concerns supplying tools, machinery, casing, tubing and other material needed for the drilling of wells.

It is estimated $476,328,320 was spent during 1924 in the drilling of the 21,894 wells completed in the United States. Of this amount, $263,736,020 was spent in the Mid-Continent in completing 11,005 wells and $212,592,300 in the other sections of the country in completing 10,889 wells. These amounts do not include money spent for leases or bonuses, for pipe lines or for storage tanks. It represents only the money spent in the drilling of the wells completed. It does not include money spent in drilling wells which were not listed as completions during 1924.

$476,328,320 Spent in Drilling

The following table gives an approximate estimate of the money spent in drilling the wells completed in the different areas during 1924:

Area—	Wells	Cost
Oklahoma	4,814	$139,244,950
Kansas	1,125	23,793,750
North Texas	2,814	61,739,160
East Central Texas	444	9,768,000
Louisiana and Arkansas	1,808	29,190,160
Total Mid-Continent	11,005	$263,736,020
Eastern Fields	4,212	$ 21,060,000
Central West and West Kentucky Tennessee	3,167	10,451,100
Gulf Coast and Southwest Texas	1,408	55,778,000
Rocky Mountain Area	864	18,835,200
California	1,238	106,468,000
Total outside Mid-Continent	10,889	$212,592,300
Total United States	21,894	$476,328,320

Mid-Continent First in Activity

Despite the fact the Mid-Continent section of the United States was experiencing a period of low prices with its markets curtailed because of the large quantity of California oil being shipped to Atlantic seaboard refineries, that area completed more wells than all the rest of the country combined and it is estimated in excess of $50,000,000 more was expended in drilling wells in the Mid-Continent than in the rest of the oil fields of the United States. Just what this portends for 1925 may be imagined easily. In another story in this issue, the importance to the entire oil industry of the Mid-Continent territory is outlined. That article shows how the Mid-Continent is coming into its own again and why it is expected to be the greatest factor in the oil business during this year.

With greater prosperity seemingly assured for this year, it is expected drilling activity will show a substantial increase in many areas and that there will be more wildcatting done than during previous years. This means the spending of millions of dollars for equipment, supplies and labor and the distribution of this money in the channels of trade throughout the oil country. It costs considerably more to drill a wildcat well than one in an area where drilling has been done before and where it is comparatively easy to obtain supplies and equipment because of the location of stores and other facilities. Consequently, if there is a large increase in wildcatting, the proportionate amount of money spent in drilling wells will be larger in relation to the number of completions.

The Outlook for 1925

A careful survey of all the oil fields of the country shows that operators are almost unanimous in predicting 1925 will be a banner year for the oil industry. Whether the wish is father to the thought, of course, remains to be seen, but it must be admitted even by a pessimist that conditions right now indicate prices, both for crude oil and refined oil products, will show a larger average during 1925 than during either 1923 or 1924. Higher prices stimulate drilling and development work in every branch of the industry.

The large oil field supply concerns have their businesses so systematized there will be little delay to operators in procuring equipment for drilling purposes and necessary tankage and pipe lines. The supply houses watch the oil field business like the refiners watch the filling station requirements and branch stores with complete stocks of all material needed are opened in centers of activity as soon as conditions warrant.

Some Promising Areas

While it is a well known fact any area looks good to a wildcatter if it has promises of being productive of oil, there are certain sections of the United States which are almost sure to get a good play this year. Already operators are exploring different sections of East Central Texas and that area will be thoroughly tested to determine if any other Powells or Worthams are located there. Oklahoma, which made a new production record in 1924, is certain to be the center of considerable new development. There are thousands of acres of promising looking territory in that State which have been waiting only for adequate prices for crude to warrant their being drilled and it seems now as if the time has come when these prices will prevail.

This year is expected to develop more wildcatting in the Rocky Mountain area than for a long time and these operations will extend over a wide territory, taking in Wyoming, Montana, Colorado, Utah, and New Mexico at least. The Salt Creek Field in Wyoming will be the scene of much drilling to deeper sand if conditions warrant going deeper for needed crude. Western Kansas does not seem discouraged by results obtained in different sections and there will be a lot of drilling done in that State. Already operators in Louisiana and Arkansas are preparing extensive drilling programs.

Natural gas companies in eastern fields may be depended upon to continue their activity in trying to develop sources of supply for their consumers. Most of these companies have large blocks of acreage which they have been holding to insure future supplies of natural gas and drilling will be carried on as the needs of the companies warrant.

California also will be the scene of much new drilling. Wildcatting is becoming more active in that State as production there has declined and a better market became available for crude. There are a number of very promising areas in California which have been waiting only for better prices for crude and the decline of the flush fields of the Los Angeles Basin.

Production in 1924 720,731,222 Bbls.

Crude Oil Output Last Year Greatly Exceeded Expectations. Average Daily Production Per Well 6.59 Bbls.

By James McIntyre

Production in the United States in 1924 came up to the estimate made by The Oil and Gas Journal last September. At that time it was expected that 720,000,000 bbls. of oil would be produced in the combined fields of the United States. The real production came to 720,731,222 bbls. The production of 1923 as gathered by The Oil and Gas Journal's staff of field men was 738,877,176 bbls., after all figures had been revised and corrected. The decline in 1924 amounted to 18,145,954 bbls., but the production of last year exceeded that of 1922 by 156,730,714 bbls., the record of 1923 having been 563,882,878 bbls.

Eight of the 18 producing States in the Union produced more oil in 1924 than in 1923, these having been Oklahoma, Texas, Arkansas, Montana, New Mexico, Colorado, New York and Pennsylvania, but of these only three, Oklahoma, Texas and Arkansas are important producing divisions where the increase in production had a telling influence in stemming the decline in other big producing divisions. California's production fell off 33,665,778 bbls.; Wyoming, 3,135,634 bbls.; Louisiana, 4,448,109 bbls., while in the East, West Virginia, Ohio, Indiana, Illinois, Kentucky and Tennessee all settled back farther as they added a year to their age. Oklahoma showed an increase of 11,192,712 bbls.; Texas, 3,646,710 bbls., and Arkansas 9,520,049 bbls. New York and Pennsylvania showed a slight gain, which may, for the most part, be attributed to flooding the sands in McKean County, Pennsylvania, and in Cattaraugus and Allegany Counties, New York. Colorado increased from 62,500 bbls. in 1923 to 391,922 bbls. in 1924, and New Mexico from an unrecorded small production to 81,800 bbls., which was its last year's output.

Production by States in 1924 and 1923 and Average daily production of wells.

	Production 1923, Bbls.	Production 1924, Bbls.	No. of Oil Wells	Av. Daily Prod. per Well in 1924
California	263,728,895	230,063,117	11,319	55.53
Oklahoma	165,013,685	176,206,397	57,758	8.32
Texas	131,997,038	135,361,378	17,713	20.9
Arkansas	38,647,863	48,167,912	2,928	44.94
Wyoming	42,386,704	39,251,070	2,557	41.94
Kansas	29,812,123	29,671,551	20,036	4.05
Louisiana	24,708,993	20,638,051	4,465	12.63
Illinois	8,720,125	8,041,000	16,731	131.
Pennsylvania	7,276,850	7,529,100	76,664	0.27
Kentucky	8,066,000	7,396,900	12,505	1.62
Ohio	7,080,125	6,797,000	39,050	0.47
West Virginia	6,400,458	5,924,000	19,847	0.82
Montana	2,677,717	2,785,724	369	20.63
New York	1,250,100	1,482,000	14,400	0.28
Indiana	1,040,500	936,000	2,505	1.00
Colorado	62,500	391,922	68	15.75
New Mexico	.....	81,800	.....	.....
Tennessee	7,500	6,300	.....	....
Total	738,877,176	720,731,222	298,915	6.59

298,915 Producing Wells

There were 298,915 oil wells producing at the close of the year, without counting the few in Tennessee and New Mexico. The average production of the 298,915 oil wells was 6.59 bbls. a day for the year. At the commencement of the year the average production per well for the month of January was 6.64 bbls. per day, from 286,569 oil wells, indicating that there was little change in average even though there were 12,346 more wells at the close than at the beginning of the year.

California wells average higher than those in any other division in the country, 55.53 bbls. per day. Those in Texas averaged 20.9 bbls.; Oklahoma, 8.32 bbls.; Arkansas, 44.94 bbls.; Louisiana, 12.63 bbls., and Kansas, 4.05 bbls. In the Rocky Mountain area, Montana's 369 oil wells averaged 20.63 bbls.; Wyoming's 2,557 wells, 41.94 bbls., and Colorado's 68 wells, 15.75 bbls.

In the old fields of the East the average is very low ranging from 1.62 bbls. a day in Kentucky, to .27 bbl. in Pennsylvania, where 76,664 wells are keeping the pot boiling for their owners.

A study of the accompanying table showing the average production of wells by States brings out that there are 149,961 wells averaged less than 1 bbl. a day through the year; 31,741 wells from 1 to 2 bbls.; 20,036 between 2 and 5 bbls.; 57,758 wells between 5 and 10 bbls.; 4,533 wells between 10 and 20 bbls.; 5,485 wells between 30 and 40 bbls., and 11,319 wells averaging above 50 bbls.

The 149,961 wells averaging less than 1 bbl. are all east of the Mississippi, but there are many such wells west of the Mississippi. In Oklahoma alone there are over 20,000 wells producing less than 1 bbl. a day, and in Kansas, about 11,000 wells in the same class and it is the multiplicity of such wells that bring Oklahoma's average down to 8.32 bbls. per well and that of Kansas to 4.05 bbls. per well. In the whole United States, there are, roughly speaking, 240,000 wells the total production of which would average no more than 1 bbl. a day per well, and it is the 58,000 other wells that produced about 1,675,000 bbls. of last year's average daily output of crude.

While the year 1923 is on record as having seen more oil produced than any other calendar year, the 12 months during which the most oil was produced ranged from June, 1923, to May, 1924, inclusive. During that 12 months 753,627,000 bbls. of crude was brought to the surface. Up to the end of May, 1924, there had been for several years at the end of each succeeding month a considerable gain in the production of the preceding 12 months. At the close of December, 1923, the production had been 738,877,176 bbls., for 12 months. At the close of January, 1924, the total for the 12 preceding months had been 742,883,000 bbls.; at the end of February, 749,078,000 bbls.; at the end of March, 752,119,000 bbls.; at the end of April, 753,215,000 bbls., and at the close of May, 753,627,000 bbls., which may stand as a record for all time. At the close of June, the 12-month record had fallen to 751,921,000 bbls., and it dropped to 746,627,000 bbls. at the end of July, and a month later saw the 12-month record at 742,009,000 bbls. It maintained its downward course in this respect until the end of the calendar year sloughing off a couple of million or more barrels each month as it passed farther out of the zone of the enormous production of the great California, Texas and Oklahoma fields which combined to bring about the unprecedented production which prevailed the last seven months in 1923 and the first five months in 1924.

Prophets Fell Short

The production of 1924 was from 60,000,000 to 75,000,000 bbls. in excess of what was expected by the petroleum economists of several of the largest oil companies. California was discounted too severely by most of the prophets and Oklahoma was underestimated by many millions. Texas also was subjected to bad guesses. The Luling and Richland Fields and the discovery of new horizons in Archer County and the brief but spectacular come-back of Powell were not considered, nor could they have been at that time. It was the same in Oklahoma. There was "nothing in sight" in Oklahoma to disturb the equanimity of the man who wanted to see production fall off in 1924, but the opening of Cromwell, and other areas near it; the discovery of deep sand production in Tonkawa and the development of numerous rich Wilcox sand pools all tended not only to maintain Oklahoma's record of the year before but to establish a new one. Arkansas also did better, Smackover operators refusing to be backed into the discard and developing sufficient production in new places to increase the output of the State to new record figures.

No attempt will be made here to offer any prophecy as to what the production of 1925 will be. That task has been delegated to another and his conclusions, carefully arrived at, will be found elsewhere in this number. As the year opened purchasers of oil from the Prairie Oil & Gas Co. down to the smallest active refiner were engaged in an effort to gather for themselves all the oil in sight in every field, and the later rapid decline in production in the Wortham, Tex., Field made the scramble for crude all the more earnest, resulting in the payment of premiums, followed by a general advance in crude prices in all the fields outside of California and the Gulf Coastal fields.

The present year opened with the same general optimism that characterises the beginning of nearly every year in the oil industry, and the promise of better prices for crude will undoubtedly stimulate the wildcatter to action, and as there are many favorable looking areas in the country yet unexplored, the coming spring will undoubtedly see much drilling activity in outlying places along with the development of areas already known to be productive but which have been held back until they are worth the expense of deep drilling operations.

SIX CENTS GASOLINE TAX PLANNED IN OREGON AND CALIFORNIA FEARS

The Standard Oil Bulletin (California) says:

From Oregon comes the astounding suggestion that the State gasoline tax of 3 cents a gallon be doubled—increased to 6 cents a gallon. Oregon, it appears, wants more funds for highway construction, and, as in the past, those desiring such funds look to the motorist and his gasoline as a convenient source of revenue.

The gasoline tax was originated in Oregon in 1919, at 1 cent a gallon. The next biennial session of the Legislature—in 1921—doubled it, making 2 cents, and the next Legislature—that of 1923—added another cent, for a total of 3. The Legislature soon meets again, and once again will consider more taxation.

What has happened in Oregon has happened elsewhere on the Pacific Coast. California adopted a gasoline tax two years ago. The California Legislature is again in session, and it is proposed that the tax be increased. In 1921 the State of Washington adopted a 1-cent tax, and made it 2 cents two years later. Nevada adopted a 2-cent tax in 1923, and is now considering an increase. Arizona decided on a 1-cent tax in 1921, and made it 3 cents in 1923.

Dangerous Lengths

No opportunity has been lost in any of these States to increase gasoline taxes. The two-year intervals between revisions upward presumably exist only because the various Legislatures meet every two years. It is interesting to contemplate how high taxes might be if Legislatures should meet annually.

The trend of events clearly indicates the dangerous lengths to which this business of gasoline taxation may be carried, and the great burdens which may be loaded upon the already heavily taxed motorist and upon the marketer of gasoline.

The original discussion of a California gasoline tax two years ago concerned 1 cent a gallon, but when the law was adopted the bill read 2 cents. Now 3 cents is proposed. There can be no guarantee that a future Legislature will not make it 4 cents, or 5 or 6—that is, no guarantee except the fact that the motoring public is no longer apathetic about its taxes and that henceforth it will register its objections, not only against an increase of 2 or 3 cents per gallon, but against any increase whatever.

From what this company believes of the future, based materially upon the past, a great growth in the number of motor cars and the consumption of gasoline—and hence tax revenues—is inevitable. The increase in motor registrations during the last five years has averaged more than 25 per cent a year.

Increase Seen

It is believed that 1925 will see a gasoline consumption in California 20 per cent greater than in 1924, due not only to more cars, but also to an increase in travel, which was greatly curtailed by the foot-and-mouth disease restrictions during 1924. The next year (1926) should show a further increase of 15 per cent, and the two following years 10 per cent each. Then the future becomes more hazy; but it would seem conservative to say that for the remainder of a ten-year period—such as is being laid down for road building—the increase will average 5 per cent annually. The past justifies these estimates and the future promises them in various ways.

If the percentages recited above are applied to existing revenues under existing laws, with no new taxes, the total sum of money paid by the motorists of the State between now and 1935—the end of the proposed 10-year period—will be more than $400,000,000, which is considerably in excess of the sum said to be needed.

If the new taxes are adopted—1 cent more on gasoline, $2 more on registration, and two-thirds more on weight fees—the total, applying the same percentages of increases, will be between $600,000,000 and $650,000,000.

Position of Mid-Continent Improved

Decline in Production in California and Mexico Causes Refiners to Supply Needs From Long Suffering Area

By Andrew M. Rowley

Retrospects are valuable from the standpoint of experience and as guides to future action, but oil men at this time are more interested in prospectives, especially in what they may expect to develop during the present year. And, while any attempt to foretell what is going to happen in the oil business should immediately place the venturesome prophet in the same class as the weather prognosticator in Texas—either a fool or a newcomer—there are certain trends which can be traced back definitely for some time and which, if continued, will serve to point the way fairly well to logical conclusions which will be of valuable importance to the entire petroleum industry.

One of the most important trends is that which indicates the Mid-Continent area of the United States will during 1925 hold a far more important position in the petroleum industry than it has enjoyed for some time. Not since the discovery of the light oil fields in the Los Angeles Basin in California has the situation looked so good from the standpoint of oil men in the Mid-Continent area as it does right now. California just about put the Mid-Continent out of business in 1923, and, during 1924, it continued heavy shipments of crude and refined oils to Eastern markets to such an extent, the situation in that year was not much better for the Mid-Continent producer and refiner.

Mid-Continent's Position Better

It is surprising how closely the trend in different branches of the industry during 1924 followed the trend of 1923. This is noted in both the producing and refining ends of the business and is continued in the matter of prices for crude and gasoline. The same condition obtained in the fluctuation of prices of oil securities on the New York Stock Exchange. Prices of both crude oil and gasoline started upward early in 1924 as they did in 1923, only to slump in late summer in both years, with slight gains recorded later in the year. The production of crude decreased early in each year only to start climbing, reaching a peak during the summer of each year and then declining again. Details of the similarity of the trends for 1923 and 1924 in each branch of the industry are given in different articles in this issue.

But, after at least two years of being somewhat in the position of a step-child of the petroleum industry, it seems now as if the Mid-Continent is again to assume a most important role in the family circle and obtain the consideration which the production, pipe line facilities and refining capacity warrant.

California and Mexico

Two main factors are contributing to this condition. First is the decline in production of California and the consequent dropping off of shipments of crude and refined oils to the Atlantic seaboard. And, second, is the decrease in production in Mexico and the slowly passing of that area as a big factor in the market situation in this country. The output of light oil in Mexico is showing a steady decline. The production of heavy oil in Mexico has been needed here because of its value for fuel oil but the light oil output was a serious competitor to Mid-Continent crude.

The steady increase during 1923 and the decline during 1924 of shipments of California oil to the Atlantic seaboard is shown in the following table which gives the intercoastal shipments of California crude, fuel and tops for the two years in barrels:

	1923	1924
January	1,500,000	5,350,000
February	2,800,000	4,000,000
March	3,800,000	4,150,000
April	5,500,000	3,600,000
May	6,200,000	3,500,000
June	5,900,000	3,150,000
July	6,500,000	3,500,000
August	5,700,000	3,600,000
September	6,500,000	3,250,000
October	5,600,000	3,000,000
November	5,150,000	2,000,000
December	5,800,000	1,900,000

Production Shows Decline

While California shipments were declining from 5,800,000 barrels in December of 1923 to 1,900,000 barrels in the corresponding month of 1924, production of light oil in Mexico was showing a material decrease, the output of the light oil fields of Mexico in 1923 being 63,426,959 barrels, while last year it totaled only 40,726,791 barrels, a drop of 21,630,168 barrels. The production of heavy oil in Mexico increased 9,929,776 barrels during 1924 as compared to 1923 so the net decline in crude production for Mexico last year was 12,700,402 barrels.

Production of crude oil in the United States showed a decrease of about 18,000,000 barrels last year as compared to 1923. At the same time, consumption registered a substantial increase and is still climbing upward. As shown in another story in this issue, the registration of automobile passenger cars and trucks increased last year 16½ per cent over 1923, the gain totaling 2,508,828 cars. Figuring the annual consumption of gasoline at 400 gallons per car, which estimate has been shown to be approximately correct, it would require about 1,000,000,000 gallons more gasoline per year to operate the automobiles in service at the first of this year than it required at the first of 1924.

Refiners Turn to Mid-Continent

With rising consumption and production showing its first decline since 1906, the 1,000,000 barrels a day production of the Mid-Continent area, nine-tenths of which is light oil and especially desirable for refiners, places this section of the United States in a most commanding position. The Rocky Mountain area is not producing enough crude oil to supply the capacity of refineries there. California refiners feel the oil produced in that State should be held there for the needs of that territory and production there has dropped sufficiently there is little excess oil for other markets. Producers in California have refused to renew contracts for delivery of crude to eastern refiners and these refiners, consequently, must look elsewhere for their requirements. Production east of the Mississippi is only a small portion of what the big refineries along the Atlantic seaboard need. Imports from Mexico cannot be counted on to supply these requirements and the only place the crude can be procured is from the Mid-Continent.

Hence, it is reasonable to assume shipments of Mid-Continent crude to Eastern refineries will be much larger this year than during either 1923 or 1924. With the Atlantic seaboard drawing heavily upon this area, it is but natural that the average price of crude during 1925 may be expected to be higher than during either of the past two years. The price of crude depends upon the supply and the demand. The demand during 1925 will be greater than during 1924 and the supply, probably, will be less, it having been estimated the production of crude this year will be about 700,000,000 barrels.

Prosperity Seems Assured

Such conditions, as indicated above, mean prosperity for all branches of the petroleum industry. The producers will benefit from higher prices received for their crude. Pipe line companies will prosper from increased business. Refiners will share in the better conditions as prices of refined products will increase as crude advances and there will be less likelihood of price wars, distress gasoline or State or municipal Governments endeavoring to enter the oil business for a brief period to capitalize on low prices. And the marketers will not have to compete with fly-by-night gasoline vendors who go into the retail business when refinery prices for gasoline are low.

Price increases have already started throughout a major portion of the country. Posted quotations for crude oil were increased in every oil field of the United States last week with the exception of California and the Gulf Coast in Texas. The substantial advances made by the major crude oil purchasing companies indicates they believe the overproduction situation has about become a thing of the past and more stable conditions may be expected in the future.

Wortham was discovered, reached its peak and started its decline in less than two months. The discovery well there was completed November 22, last year. The peak of 168,462 barrels was reached during the 24 hours ending on the morning of January 14. The output of the field started to drop immediately, declining about 40,000 barrels daily during the following week.

Crude Oil Price Increases

Wortham, it is believed, served to hold back crude oil price increases. It is a fact the general increases in prices came only after it was decided definitely Wortham had reached its peak and had started its decline. The increase in prices in the Mid-Continent made last Thursday were the first since last September. As The Oil and Gas Journal had pointed out a number of times, the industry was really aided by Wortham in that price increases, which had been expected to be made early last December, were postponed until last week. This delay in advancing crude oil prices will be of benefit to everyone in the business as the higher prices will be effective for a longer period than they otherwise would have been, the interval between early December and this time permitting the industry to stabilize itself more and get itself in a better position to care for any increased production likely to result from higher prices.

During 1923 there were eight oil fields which attained a production of 100,000 barrels a day or more. These fields reached their peaks within a period of seven months in 1923. When it is considered that during the entire history of the petroleum industry, since the Drake well, there have been only 17 fields which attained a daily production of 100,000 barrels or more, it is not hard to visualize what the industry had to contend with during the past two years. The year 1924 missed having a new 100,000-barrel-a-day field by four days, Wortham going over the 100,000-barrel mark on January 4 of this year.

Drilling More Active

Higher crude prices mean more drilling. Extensive drilling campaigns are bound to develop some new fields. The general price advances had hardly been made last week before drilling contractors, wildcatters and others had started oiling up their outfits to start work in various sections they deemed promising. Already somewhat of an exodus has started from Wortham and is moving to other sections of East Central Texas where a new field might be developed at almost any time.

The only real restraint which can be placed on drilling is low prices for crude. With increased prices this restraint is removed. But operators can help in prolonging the period of high prices for crude if they are conservative in the development of proven territory and in operating their leases which are producing. The less oil brought to the surface, the higher will be the price paid. Drilling of unnecessary offsets only hastens the drainage of the pool. And the longer the oil remains in the ground, the more valuable it will become for consumption is increasing more rapidly than production and higher prices for crude oil in the future are certain.

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The Great Problem of 1925

The good feeling caused by falling production and advancing prices should not lead oil men to forget that the Government's conservation inquiry will be the most important problem before the industry this year.

On the outcome of that inquiry the whole future of the industry may depend.

Whatever may have been the genesis of the suggestion full credit must be given to President Coolidge for the manner in which he has approached the subject. He is naturally anxious to promote the industrial advancement of the nation in any way he can; to be helpful, not harmful. With characteristic common sense he has proposed, it will be noted, a study, rather than an investigation, of the oil situation.

The oil industry has had more than enough of investigations; it can welcome a study of its operations and difficulties and achievements.

In selecting the members of the Conservation Board The President is to be congratulated in choosing members of his cabinet, in close personal touch with him and with each other and therefore free to function effectively. Like Mr. Coolidge, they are assumed to have entered upon their task with open minds and it can be hoped that in the progress of their study they may become so familiar with the problems of the oil business that, with the cooperation of the industry itself, a petroleum policy may be mapped which will work to the benefit of the industry and of the people at large.

Discussion of conservation of oil is likely to turn largely around the theory of Government reserves and the question of economic waste.

RESERVES AND ECONOMIC WASTE

There has been a rather too ready popular assumption in this conservation discussion that the industry is wasteful in its methods. Overproduction, resulting mainly from conditions over which the industry, under existing laws and regulations, has no control, has been the chief source of waste. The operations of the industry itself have been in modern times designed to check and stop wastefulness as an essential part in the efficiency of any great business.

In the Pennsylvania fields developed 50 years ago they are still getting oil and flooding is expected to recover millions upon millions of barrels retained in the sands. When declining production increases the price of oil sufficiently to justify the additional cost of recovery means will be found to bring to the surface the vast stores of oil that could not be recovered at prevailing prices.

It was established during the war when the Government mobilized oil that the industry, when untrammeled and at liberty to use what methods were necessary, could produce whatever supply was required. It has gained in efficiency since then in both production and manufacturing methods.

WHEN OIL WAS MOBILIZED

Government storage in the ground has been suggested, but the experience with the estimates for the Teapot Dome Naval reserve was disappointing. Finding oil with the drill and leaving it to be recovered later also fails to work as successfully in practice as in theory. Perhaps the best that can be hoped is a consensus of opinion that, however, may be subject to reversal by subsequent experience.

Another phase which will probably engage the attention of the Conservation Board is the use of fuel oil for purposes that can be served by coal. At first thought it might be deemed a waste of the lesser reserve but there must also be taken into account the greater economy and efficiency of the oil fuel, particularly in its use by shipping whereby it speeds the transportation of the whole world. The opinion of Sir Frederick W. Black, quoted in an article elsewhere in this issue, regarding the economic advantage in the utilization of heavy residual oil for marine fuel is of timely interest.

OIL BURNERS AND MOTORSHIPS

The day is coming, no doubt, when Diesel motorships will be designed to use heavier fractions and, indeed, the increasing cost of fuel oil will hasten such improvements.

The petroleum industry, in fact, is due to pass through the same phase as the gas industry has been going through in western Pennsylvania where the declining supply and advancing prices forced the companies to conduct a campaign of popular education regarding the use of more effective burners.

Already that progress has been exemplified in the case

of lubricating oils. The chart recently published in The Oil and Gas Journal, showing the production and consumption of lubricants between 1918 and 1924 to have been almost a straight line despite the enormous increase in the number of motor vehicles and in the consumption of gasoline, strikingly exemplified a startling fact and caused widespread discussion.

PRICE STIMULATES IMPROVEMENTS

The explanation, of course, lies in the improvements in automotive engineering which have permitted effective lubrication of millions more cars with a relatively small increase in the quantity of lubricating oil needed.

Had lubricants been as cheap in proportion as gasoline it may be doubted whether these improvements effected at great cost would have been stimulated as they were, since there would have been no such incentive to efficiency and economy.

If gasoline should go higher, through decreased production of oil, automotive engineers stand ready to perform like services in producing improved motors which will give, instead of 12 to 15 miles to the gallon, anywhere from 50 to 60 miles to the gallon.

SIXTY MILES TO THE GALLON

So long as gasoline is cheap the expensive changes which would be necessary to secure this greater mileage are not a commercial proposition. It would cost more to install the improved motors than to buy the cheap gasoline but were this reversed the more expensive gasoline would speedily force new motors on the market.

This inventive progress in the machinery using petroleum products has been more than paralleled in the actual achievements of the oil industry. While the production of crude oil has been increased only three times what it was in 1913 the production of gasoline has been multiplied more than six times. Compared with a recovery of 10 per cent not so long ago the gasoline now recovered from a barrel of crude is 33 per cent.

CONSERVATION BY OIL INDUSTRY

That is the oil industry's answer to the popular impression of wastefulness of our petroleum resources, the actual getting of two and one-third times as much gasoline from the same amount of crude.

And with a reasonable price for gasoline, based on its essential value, still larger percentages could be obtained and will be obtained when the demand and price justify the additional expenditure in extracting it.

Were it not for the cracking processes, which have been made the basis for prosecution by the Department of Justice, motorists today would be paying much higher prices for their motor fuel, there would be a much smaller increase in the purchase and use of automobiles and motor trucks, business and pleasure would move more slowly, and, instead of an overproduction of oil, we would be suffering a shortage.

HOW INDUSTRY HAS FUNCTIONED

The large share in the supply of natural gasoline, due to the enterprise and resourcefulness of the natural gasoline industry, is another answer to any charge of waste against the oil and gas industry. In what other industry has practical conservation been so thoroughly conceived and carried out by the men in the industry themselves?

Whenever there has been an improvement in equipment for drilling, for pipe lines, for refining, the oil industry has been prompt to take advantage of it. In this respect it is probably unequalled by any industry anywhere in its readiness to test and to accept new ideas and apparatus. It seems to be part of the spirit of enterprise that is found throughout the oil business. And it is largely to this spirit of exploration and research and readiness for innovations that the amazing increase in the efficiency of the entire industry has been due.

NEW IDEAS ARE WELCOMED

Equal initiative and energy would no doubt have been applied by the industry to the regulation of unnecessary production had it been permitted to deal with the problem, but here it was checked and circumscribed by usages and customs traditional before petroleum was developed, by restrictive laws and regulations enacted in a period of popular delusion and by the threat of judicial or administrative penalties that took no account of twentieth century conditions.

Here we are, living in the age of the automobile and the aviator, but subject to the proscriptions and prohibitions devised in the days of the horse and buggy.

People laugh at the retention on our statute books of the "blue laws" applying to social habits of a century ago but never stop to think of the absurdity of applying to the intensely complicated civilization of today the "blue laws" passed a generation back in the vain effort to limit the course and progress of that development.

"BLUE LAWS" AGAINST INDUSTRY

In the stress of national emergency during the war it was at once recognized that these laws had to be suspended if the nation's industries were to function at their highest efficiency. The wartime oil board was released from the restrictions which handicap the industry in peace. It was empowered to mobilize its resources to secure the greatest possible results and to enforce reasonable rules, regulations and prices.

Red tape was cut right and left; impractical restrictions brushed aside, with the sole purpose of effective operation.

If a practical conservation program is to be evolved now much the same methods will have to be employed. The President has urged the imperative necessity of remedial action. National supremacy, he says, may be determined by the possession of available petroleum and its products.

RED TAPE SHOULD BE CUT

He further states that the oil industry's welfare is so intimately linked with the industrial prosperity and safety of the whole people that Government and business can well join forces to work out this problem of practical conservation. The problem must be solved, he warns, or our manufacturing productivity will be curtailed to an extent not easily calculated.

Evidently he believes the nation to be confronted by

an emergency which calls for exceptional measures. If it was found necessary to throw aside statutory handicaps to secure efficient functioning by the oil industry in the emergency of war may it not be necessary to revise or repeal such restrictions to secure the solution of this problem of today?

STATUTORY HANDICAPS

The popular agitation which led to the enactment of anti-trust legislation was inspired largely by fear of mere size. The anti-trust laws were the product of the days of individualist industry when our industries were still mainly personal enterprises or conducted by small companies of active operators. By these the merging of interests into larger consolidations which, by operating on much greater scale, could secure economies and advantages impossible to the smaller, was regarded as a crime that ought to be made so by act of Congress.

It mattered not that the larger companies were necessary to carry on the greater business of the nation or that in practice the public was thereby securing better service. The anti-trust laws, of course, failed to stop the inevitable progress of modern business but their continuance remains a menace which hinders and halts every step towards the logical and natural development of the times.

FAILED TO STOP PROGRESS

Nowhere has this "dead hand" been more handicapping than in the oil industry which has found itself threatened at every movement with the penalty of prosecution or governmental control. It will be fortunate if the President's action leads to a thorough study and ventilation of the industry's situation and the formulation of a policy in regard to petroleum which will allow the industry to develop to the best advantage of the whole country.

It is clear from experience that any sort of governmental interference with any branch of legitimate business or industry is harmful, but particularly so in regard to the production of oil where the future supply so much depends upon the individual initiative of those who are ready to risk their fortune to find oil.

INITIATIVE MUST BE FREE

It is impossible to imagine such men, who continue to be the pathfinders to petroleum, submitting their enterprise to the direction and control of some official dictator or arbiter responsive, perhaps, rather to politics than to business and empowered to determine the fate of the savings of the thousands of investors in the oil industry and the development of the industry itself.

During the past three years of depression in the oil business, due to overproduction, the Government had an excellent opportunity to put conservation theories into practice but lamentably failed to do so, throwing the oil leases of the Osages upon the market and forcing development in a period of low prices. This was the effect of congressional interference with a business of which it manifestly knew nothing.

GOVERNMENT ITSELF FAILED

If the Government wants to do something constructive for the oil industry in furtherance of conservation more can be accomplished by reducing legislation than by adding to it. Not more laws, but less of the kind that limit initiative and deter expansion are what is needed.

A great deal might be accomplished by a Government policy of encouragement in dealing with the Bureau of Mines and the Geological Survey, the two agencies of the Government most intimately concerned with the development of the oil industry.

The scientists engaged in these bureaus and the Bureau of Standards have contributed materially to greater productiveness in field and refinery. Oil men attest the invaluable aid obtained through these researches despite lack of adequate financial support by the Government.

SHOULD AID SCIENTIFIC BUREAUS

America's development of helium gas, so essential to the operation of our dirigibles, resulted from the indefatigable efforts of these scientists. The practical application of the discovery of this rare gas in the corona of the sun during an eclipse has been made possible by their studies and direction.

Their experiments in the use of motor fuels and lubricants has been a considerable factor in the progress of our automotive industry and the more effective utilization of our petroleum products. Their studies of crank case dilution, for instance, have made for better lubrication and economy. Seven years ago cars and trucks used on an average three-fourths of a barrel of motor oil annually. They now use about one-half barrel. Today we have over 17,500,000 motor vehicles using a half barrel of lubricating oil a year, which is generally thrown away when the oil is changed. Research is finding a further use for this used oil, surely a practical economy of great value.

CHECKING WASTE OF MOTOR OIL

Governmental assistance in such constructive conservation is of immediate benefit to the whole country. While this is understood to be an era of Federal economy no money from the treasury could be better invested than in enlarging the appropriations for these scientific services commensurate with the value of their returns to the industrial life of the nation.

These suggestions touch but some of the factors that may be embraced in the coming conferences on conservation. This is the first time the Government and the oil industry have come together on equal terms for the exchange of information and suggestions. It is an unexpected and unprecedented opportunity for the industry to show the country just what its problems are and to offer recommendations for solving them. The fact of the president's active interest, the high position of the members of the conservation board, the frankness with which the board has invited the full and free cooperation of the industry in determining its own future all assure the widest publicity for its suggestions and conclusions.

FIRST OPPORTUNITY FOR CONFERENCE

The American Petroleum Institute at its Fort Worth meeting approved a program for the expenditure of $100,000 in placing the case of the oil industry before the people. No such opening as the program of President Coolidge was then contemplated. The entire industry should bestir itself to place its best advice, knowledge and service at the disposal of the Conservation Board in the effort to arrive at a practicable and satisfactory solution of what is undoubtedly the chief problem before the industry today.

The Oil and Gas Journal, as the representative publication of the oil industry, hopes to be of assistance in the discussion of the work of the Conservation Board and to that end proposes to publish from time to time information and suggestions worthy of consideration, believing it the duty of everyone in the industry to contribute any thought that may be of value at this critical period.

DRESSER

STEEL PIPE COUPLINGS

Natural gas Companies realize that installations should be made with the idea of permanency and low maintenance costs.

The Oklahoma Natural Gas Company in their new installations take every precaution to secure maximum efficiency in their pipe lines. The picture shown in this ad is one of their lines. To prevent corrosion of the pipe, it is coated, then wrapped, and again coated.

They have standardized on DRESSER COUPLINGS because they know from experience that they are strong, flexible and durable, and will remain permanently tight.

A few cents per Coupling cuts very little figure, one way or another, on the original installation. What counts in the long run is the cost of maintenance. DRESSER COUPLINGS will reduce your pipe line troubles to an absolute minimum; will withstand any pressure the pipe will carry, and insure gas-tight joints for all time.

S. R. DRESSER MANUFACTURING COMPANY
Bradford, Penna.

DRESSER-COUPLINGS-DOMINATE

Late News From the Fields

OKLAHOMA

The Prairie Oil & Gas Co.'s No. 1 Davis, SE cor. SW, Section 34-10-9, Okfuskee County, had a hole full of oil from sand at 3,279-3,309 feet. The oil came after going through a four-foot break at 3,300 feet, and had practically no gas. The same company's No. 4, in the SW cor. of the same section, was making 5,000,000 feet of gas from sand at 3,065-3,110 feet.

Furman & Shaffer's No. 1 Samuel, SE cor NW NW, Section 22-10-9, a wildcat, was making 5,000,000 feet of gas and a small show of oil from sand at 3,095 feet.

The Roxana Petroleum Corp.'s No. 5 Yarhola, NW cor. NE SW, Section 3-10-8, made 2,040 bbls. in the 24 hours ending Tuesday morning from sand at 3,395-3,420 feet.

Johnson and Ashe's wildcat No. 1 Jefferson, NW cor. NE SW, Section 35-8-8, Hughes County, which was on fire, was extinguished with a shot of dynamite, and put under control. Tuesday it gauged 48,000,000 feet of gas.

EAST CENTRAL TEXAS

MEXIA, Tex., Jan. 27.—Production of the Wortham Field for the 24 hours ending Sunday was 116,083 bbls., from 114 wells, and for the 24 hours ending Monday at 7 a. m., 107,690 bbls. from 123 wells; for the same period ending this morning it was 100,378 bbls. from 135 wells.

Late completions included the following:

Simms Oil Co. & Marland Oil Co.'s No. 2-A. Simmons, sand at 2,926-84 feet, 600 bbls.

Same companies, No. 1 Rogers, sand at 2,968-3,010 feet, 600 bbls.

Farish, Watts & Collins' No. 4 Jackson, sand at 2,986-3,014 feet, 50 bbls. the first 17 hours.

Same operators, No. 2 McCorkle, sand at 2,986-3,030 feet, 1,200 bbls.

Moss & Keeling's No. 1 C. Moors, sand at 2,960-3,008 feet, 1,200 bbls.

The Texas Co.'s No. 3 Watson, sand at 2,985-2,993 feet, 900 bbls.

Magnolia Petroleum Co.'s No. 4 Boyd, sand at 3,010-22 feet; 70 bbls. in 22 hours.

Same company's No. 6 Boyd, sand at 3,018-21 feet, 62 bbls. in 14 hours.

Same company's No. 15 Boyd, sand at 3,000-22 feet, 800 bbls. the first 18 hours.

Rio Bravo Oil Co.'s No. 7 Railroad right of way, sand at 2,948-67 feet, 700 bbls.

J. K. Hughes, No. 3 Crouch, sand at 2,970-3,005 feet, 1,000 bbls.

Humble Oil & Refining Co.'s No. 8 Dodd, sand at 2,984-3,025 feet, 94 bbls. the first hour. This is the most northeasterly well in the field.

Humble Oil & Refining Co.'s No. 1 Manning, sand at 2,934-3,000 feet, 60 bbls. a day.

Same company's No. 3 Manning, sand at 2,974-3,006 feet, 75 bbls. a day.

Magnolia Petroleum Co.'s No. 2 Boyd, sand at 2,979-3,020 feet, 900 bbls.

Same company's No. 3 Boyd, sand at 2,976-3,020 feet, 850 bbls.

Ray and Massie's No. 1 Barry, sand at 3,002-12 feet, 240 bbls.

Simms Oil Co.'s No. 1 Calome A, sand at 2,971-3,011 feet, 200 bbls.

Humble Oil & Refining Co.'s No. 1 H. B. Stubbs, sand at 2,991-3,020 feet, 1,000 bbls.

Same company's No. 2-A Lindley, sand at 2,994-75 feet, 700 bbls.

Simms Oil Co. & Marland Oil Co.'s No. 8 Simmons, sand at 2,968-65 feet, 500 bbls.

Ultimate Recovery

The ultimate recovery of the Wortham Field is a matter of speculation here. The Humphreys-Boyd Oil Co. expects to recover at least 10,000,000 bbls. of oil from its leases. This company is using the latest engineering methods in the development of its properties. Not a drop of water has appeared in its wells on the Simmons' farm, while every lease surrounding it has felt the influence of the inroads of water, more or less. While the Humphreys-Boyd's neighbors were producing oil from wells wide open, Col. Humphreys' company kept its wells pinched down. Instead of drawing the oil from the Humphreys-Boyd wells, the surrounding wells drew water, leaving the Humphreys-Boyd lease with nothing but clean oil. It is much the same condition that took place in Powell when Garland Kent's 40-acre lease in the heart of production was supposed to have been drained by surrounding leases. After a period of a year and a half, the 40 acres is producing 2,800 bbls. a day while its neighbors are getting little. The Simmons lease in Wortham Field is expected to produce a great volume of oil for the Humphreys-Boyd Oil Co. before the water comes to put an end to further production. The policy of the Humphreys-Boyd organization has been to pinch in its oil wells from the beginning rather than to wait until the oil begins to emulsify.

Good Production for Long Time

Engineers working in the Wortham Field have been able to determine the water level in each of the four strata of sand that make up the Woodbine series. Each sand is covered with an impervious cap rock. On the east side of the up-thrown structure only the top stratum is available as deeper drilling means drilling into water. Farther west, two, three and then all four sands are available. The deepest stratum may be developed first and the upper stratum later. It is considered that the field, after the big flush production is a thing of the past will continue as Mexia and Powell, did to be a field of large production. One lease, at least, in the Powell Field, the property of the Gulf Production Co., has produced over 100,000 bbls per acre and such an acreage production is not impossible on well administered leases in Wortham. In fact, the Humphreys-Boyd Oil Co. expects to get 200,000 bbls. per well out of its wells in the north end of the field and 100,000 bbls. per well out of the wells in the less favorable looking south end, and the wells are as closely spaced as those in Powell.

It has been found impracticable to produce oil by air in the Wortham Field because the fluid level is too low. This method of bringing up production was highly successful in the Powell Field with its high fluid level. It will be necessary in Wortham to pump most of the wells after they stop flowing.

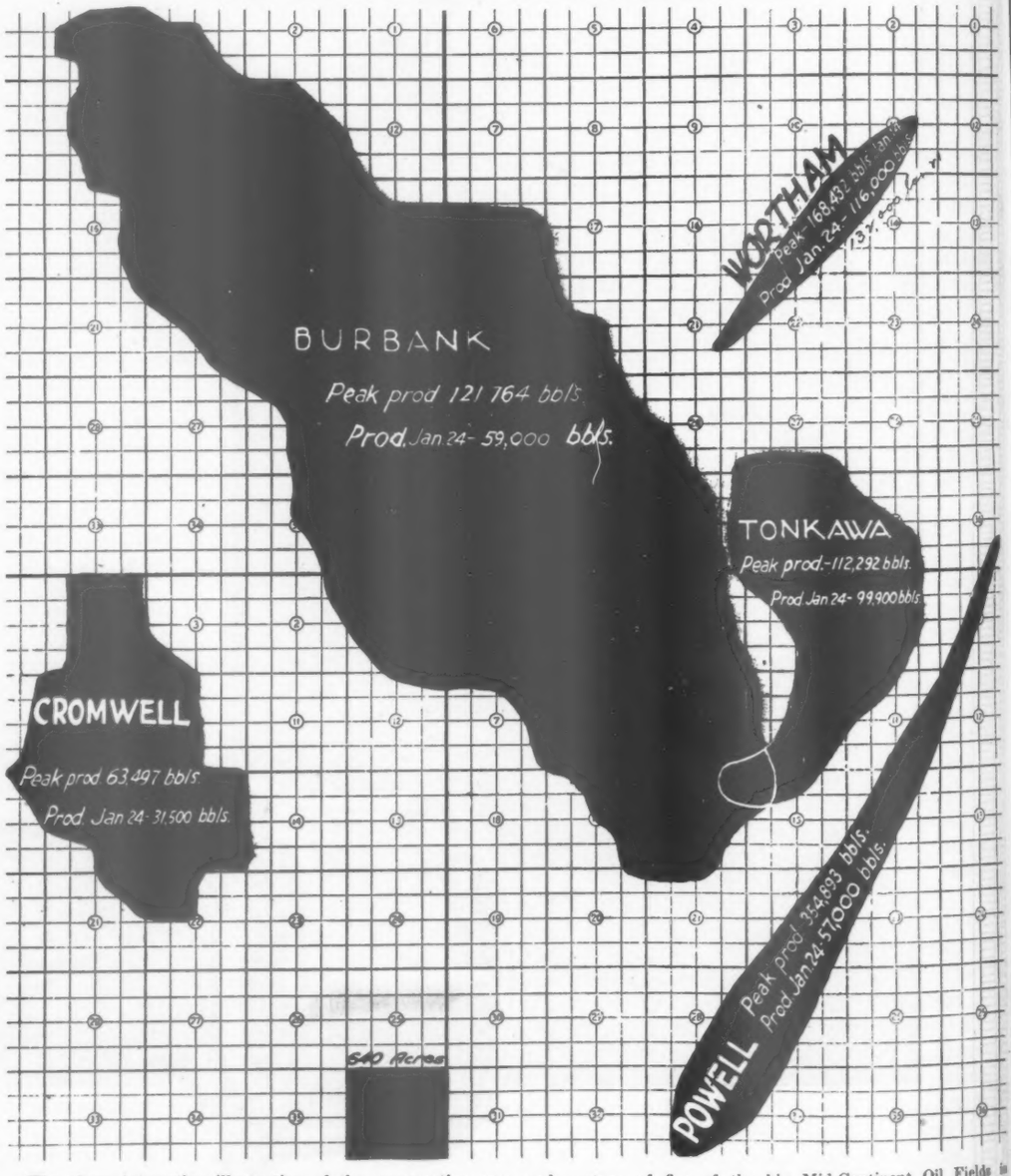
NORTH CENTRAL TEXAS

In Archer County, the Mutual Oil Co. and others' No. 5 Harmel is reported a producer making an estimated 100 bbls. from the sand topped at 1,265 feet and drilled into 20 feet.

Over the line in Young County, but still in the shallow producing belt, there

(Continued on Page 256)

COMPARISON OF FIVE LARGE PRODUCING AREAS



The above interesting illustration of the comparative area published through the courtesy of the Sinclair Consolidated very sections occupied by the Burbank Field in Townships Counties in Oklahoma and the exact area in Township 12-8, The long and narrow Powell Field in Navarro County, Texas, string" area of Wortham, in Limestone and Freetone Counties, two Oklahoma fields.

Southern Kay and Northern Noble Counties has been added been necessarily outlined in white so as not to take away and contour of five of the big Mid-Continent Oil Fields in Oil Corp. The engineer who made the drawing marked out the 27-5, 27-6, 26-5, 26-6 in Eastern Kay and Western Osage Seminole County, Oklahoma, occupied by the Cromwell Field. shaped like the war club of a caveman and the smaller "shoe- Texas are drawn in exact shape, and on the same scale as the

The comparative shape and size of the Tonkawa Field in to the original map, the southwest edge of the field having from the true contour of the Burbank Field.

Immediate Steel
for Construction and Repairs

STEEL plays an important part in the oil industry—and when something breaks or when construction or extensions are necessary you want the steel in a hurry—you cannot afford to wait for it.

Sometimes it is needed in large quantities, sometimes only a bar, a sheet or a few bolts—but always in a hurry.

A wire, telephone or letter to the nearest Ryerson Steel-Service Plant will start the steel on its way at once. No waiting —no delay.

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RYERSON STEEL-SERVICE

WILL BE BIG YEAR FOR DRILLING DECLARES CHAIRMAN H. F. SINCLAIR

H. F. Sinclair, chairman of the Sinclair Consolidated Oil Corp., accompanied by E. W. Sinclair, president of the company, visited Tulsa Saturday. In the course of an interview Chairman Sinclair said:

"We must keep on producing oil. The needs are constantly growing and must be met. In the course of time foreign fields will provide a much larger proportion of the world's petroleum requirements than now, but it should not be forgotten that development in foreign fields is necessarily slow."

The oil industry has not suffered so much from excessive drilling as from the fact that it was not fully prepared to store temporary flush production, in the belief of Mr. Sinclair.

"We have permitted ourselves to be frightened by claptrap. How many consumers have felt at any time in recent years that they were paying as much as the gasoline was actually worth? Most of the complaints have come from other sources.

"Sound business principles require that we get fair prices for our products, and if we insist upon getting them we will be safeguarding the interests of the consuming public.

"Personally I doubt whether 1925 will produce as much crude petroleum as did 1924, but it is to be expected that the consumption will grow. Where are we to get this crude if the domestic fields decline? Mexico is no longer occupying such a large place in the picture, and Colombia and Venezuela are fields of the future and cannot worry us for the coming year, if not longer.

Big Year for Wildcatter

"This condition is going to give the wildcatter the biggest play he has had in several years and with greater promise for remunerative reward. The large companies are also going to do more drilling and improved field practices are to be sought, but to my mind the greatest development will come in the refining phase of the industry.

"The refiner will enjoy more and more prosperity than for some years, and he will have it in his hand to keep crude prices on the upgrade until newer fields come in and relieve the strain on accumulated stocks and the old fields. In my opinion the refiner should base his profits from now on the spot market for gasoline and not on the tank wagon market. A profitable spot market plus transportation and distribution expenses, will mean continued profits, and the refiner should be careful not to attempt price cutting, for as soon as that condition starts, then he starts to wreck the refinery market structure.

"The market should not be governed so much as it has in the past few years by retail prices. The direct basis of refined oil quotations is the prices for crude oil and not the price at the filling station.

"We must not have disproportionate prices between the refined and crude materials as we have had in the past two or three years if we expect to move in the right direction. The power to regulate the proper relationship of one to the other lies entirely in the hands of Mid-Continent refiners.

Not Price Makers

"You call us 'price-makers,' but you are mistaken. There is no power in the world that can make prices if conditions do not justify them. The development of the proper relationship of prices of refined oils to that of crude, is made by Mid-Continent independent refiners and we merely follow whatever condition is created by their action.

"There will be no wild move in markets if refiners dish out their products as they are needed.

By improper management instead of supplying gasoline as the need arose, it was dumped on the market for whatever prices could be obtained, but these crashed from the weight of the offerings.

Mr. Sinclair sees no menace in crude stocks accumulated during the past several years of overproduction. "We need these reserves to stabilize the market," he commented. "What would happen if we had no oil in storage and we were unable to find the oil to meet our current demands? Confidence in the industry would be forever lost, and our business probably would be placed in the hands of the Government.

"Wortham is behind us. Resumption forever rising is ahead of us. Consumption is steadily going up the ladder; demand for oil is very large; and with proper management in the development of oil resources this year, oil producers should again see a good and profitable year—something they have not witnessed for a long time.

"Higher oil prices will be justified so far as we can now see. There is a shortage of current production to meet current demands; and the upward movement in prices is absolutely necessary."

Harry F. Sinclair

SENSATIONAL ADVANCES IN GASOLINE QUOTATIONS

(Continued from Page 20)

based on the crude prices. Due to the week's crude changes these contracts are also brought more nearly in line with spot prices.

Gasolines and Naphtha

Ever since the crude and tank wagon advances were first announced, the high and low quotations on any grade of gasoline have generally varied 1 cent. As soon as the changes were announced many refiners got out of the spot market. Some continued to quote but their prices were so high they had no market importance except to lead in the upward price trend. Buying, previous to the advances, had been slow and this situation did not change until Monday when the final 1-cent advance was announced in the Standard of Indiana territory.

Some export buying made its appearance both in Oklahoma and North Texas on Monday and encouraged by this development, refiners did not hesitate long in advancing their prices an additional ½ to ¾ cents. Several refiners quickly advanced to 10 cents for 58-60 U. S. Motor and quotations as high as 10½ cents were reported on Tuesday. Other refineries were slower in advancing their prices and were taking care of buyers at lower prices. There was also some material in the hands of marketers to be ordered out before the end of the month and this was also available at lower quotations.

Export Buying

Export buying of 64-66, 375 made its appearance on Monday at 13 cents, both in Oklahoma and North Texas. In the case of North Texas, buyers were said to have offered as high as 13½ cents for February delivery and 13¼ cents in Oklahoma. At least two of the larger exporters who buy from this area were in the market. These buyers are apparently expecting higher export prices in the near future. The Standard Oil Co. of New Jersey advanced its Baton Rouge, La., price 1 cent to 15 cents on Friday. However, this would not justify a 13 to 13½-cent price at Oklahoma and North Texas plants, except for the belief that further advances would materialize in the near future.

Increases on other grades of gasoline are in line with those just explained. Naphthas are not so active although several plants state they will advance their prices later.

Some improvement in the domestic market was reported on Monday. When only a 1-cent advance was announced in the Standard of Indiana territory, following the crude change, both buyers and sellers were disappointed and the jobbers were slow in accepting the higher prices asked by the refiners. This situation improved on Monday with the additional 1-cent advance in tank wagon prices and late Monday many wire inquiries were received from jobbers. It was not possible at this writing to determine what the reaction of the jobbers will be to the higher prices they were quoted. So long as exporters stay in the market and additional crude and tank wagon increases seem assured, it seems likely that refiners will refuse to lower their prices, regardless of the attitude of the jobbers.

Kerosene and Distillate

Both kerosene and distillates are firmer than they were a week ago. The demand for distillates after slowing up for a couple of weeks, has improved and refiners are having no difficulty in maintaining their prices. Sales of 38-40 straw distillate were made on Monday at 4⅛ and 4¼ cents. There has been no apparent increase in the demand for kerosene, but many of the trade believe that the crude price changes, coupled with a spring demand will bring higher places later and they are not offering any more material than the buyers will readily absorb. As shown in the accompanying graph, giving the "Refined Market Trend," kerosene prices did advance rapidly last year in February, reaching a high of 6 cents for 41-43 water white. Although the actual spring consumption does not increase until March and April buyers start purchasing their supplies earlier. A continued strong demand for distillates will also aid the kerosene market. During the week sales of 41-43, water white, were made at 4⅜ to 4½ cents with a ¼-cent higher price for the 42-44, water white.

All grades of natural gasolines advanced. Several manufacturers announced a price of 10 cents for Grade 1 on Monday. Some sales have been made for February delivery, based on the present spot prices. Other sales for February are based on the spot market in trade journal quotations on date of delivery. The advances made during the week are a reflection of the changes in the refinery gasoline prices. Blenders said Monday that due to the higher natural gasoline and naphtha prices they would be compelled to again advance their prices. Several attempt to secure 58-60 U. S. Motor prices for their blends.

Fuel and Gas Oils

Fuel and gas oils have been strong since the first of the week. The same situation applies to these products as that of kerosene. The demand has improved and the sellers are offering only limited quantities. One refiner was reported in the market during the past week, seeking to secure quotations on gas oil over a period of 90 days. He is said to want the gas oil for his cracking plants. The higher crude and gasoline prices will add to the value of gas oil as cracking material and will no doubt be an important market factor in the future. The 24-26 fuel oil and some of the lower gravities were selling at $1.35 on Monday. This represented a 5-cent advance over the quotations of the latter part of the previous week.

Lubricating Oils and Wax

Several manufacturers have advanced their prices on cylinder stocks, bright stocks and neutrals. Cosden & Co. has not advanced either their neutral or bright stock prices and it is understood that they do not expect to make any changes until the demand improves. This company's schedules have been higher than several other manufacturers. Cylinder stocks for which there has been a steady advance are generally 1 cent higher than last week. Wax prices are ⅛-cent higher than last week.

MR. SINCLAIR'S KEYNOTE FOR 1925

By H. F. Sinclair

Optimism in the petroleum industry has increased tremendously as a result of recent price advances. Consumption now exceeds production and most of the large companies in the Mid-Continent are drawing from storage. The longer this condition lasts the higher prices must go. The demand for all petroleum products has been increasing more rapidly than is generally realized. This demand will continue to increase and in order to meet it we must continue to drill for oil. Few consumers would object paying what the oil is actually worth but they would naturally resent violent price fluctuations. The storing of oil during periods of flush production is the best stabilizer and I believe the future course of the petroleum market will clearly demonstrate that a wider adoption of this policy will be beneficial to the industry and to the consuming public.

CALIFORNIA MARKET IN FEATURELESS WEEK

LOS ANGELES, Cal., Jan. 26.—The last week in the California market has been quite featureless. There is noticeable, however, a gradual improving sentiment among local refiners and marketers. This cheerfulness is based almost entirely on continued reports of strengthening prices east of the Rocky Mountains. Advances in the open market price of gasoline in California and the Pacific Coast in general are confidently expected for the early spring. Gasoline and naphtha stocks in California are still exceedingly large and growing. However, higher prices in the East mean higher prices for the surplus gasoline shipped East from California and therefore it is expected the local market will be strengthened to a considerable degree.

Natural gasoline, which was temporarily weak all through the middle of January, is again showing a hardening tendency although prices have not advanced. It can still be obtained in fair volume at from 11 to 11½ cents per gallon.

The fuel oil market continues strong.

GETS WELL AT WORTHAM

W. A. Sizer, treasurer of J. H. Greenhalgh & Co., Chicago, brought in a good well on the Patterson lease, in the Wortham Field, recently. The well came in for 1,000 bbls. Mr. Sizer is drilling another well on the Barrie lease, which has all the indications of being a good well, and which is expected to be drilled down to the sand within a few days. J. E. Walsh of San Antonio, who holds an interest in the above wells, superintended the drilling of both wells. Mr. Sizer also heads a syndicate which is about to start a deep test well on an 8,000-acre lease in Uvalde County, Texas, upon which lease the geology is said to be favorable.

Oklahoma Field Operations

By C. D. Lockwood

Wildcats in Hughes and Okfuskee Counties have important gas showings. Southwestern Petroleum Co.'s test in Lincoln County makes 50 bbls. and drills into water. Papoose Pool shows big gain in production. Comar Oil Co. gets two extension wells in Tonkawa deep sand area.

The ever-interesting Okfuskee-Hughes-Seminole-Lincoln Counties district, southwest of Tulsa, contributed most of the important field news in Oklahoma during the past week. And while Seminole County was left out of the story of new developments, due to a serious delay in a North Cromwell extension test, two important gas showings occurred just across the Seminole County line on the east and north. One was a 35,000,000-foot wildcat gasser in western Hughes County, just about 2 miles east of the Wewoka Field; and the other, also a wildcat, located in Section 26-11-7, Okfuskee County, was making 1,000,000 feet of gas.

Other significant developments of the week included a jump of about 10,000 bbls. in the daily average production of the Papoose Pool in Hughes County to a new high mark of 45,360 bbls.; the drilling of the Southwestern Petroleum Co.'s promising well in the Davenport district, Lincoln County, through the sand into water; the intrusion of water in a deep sand edge well at Tonkawa; and the fact that The Texas Co.'s 700-bbl. well in the Atlantic Pool, south of Pawhuska in Osage County, went dead on the second day.

The Hughes County wildcat referred to above is Johnson and Ashe's No. 1 Jefferson, NW cor NE SW, Section 35-8-8, 2 miles east of the Wewoka Field, just across the line from Seminole County. It is separated from the Wewoka Field by a dry hole in the SE cor. SW NW, Section 34-8-8, which was drilled to a depth of 3,310 feet. The Johnson and Ashe well encountered a flow of from 35,000,000 to 50,000,000 feet of gas at 3,150 and caught fire, burning down the rig. On Monday morning the fire had been put out, and efforts were being made to control the gas.

J. C. Wrightsman's No. 1 Schove, SE cor. SW NW, Section 26-11-7, Okfuskee County, got sand at 3,615 feet, and when 1 foot in was making 1,000,000 feet of gas.

New Wells in Papoose Pool

The Papoose Pool in Okfuskee and Hughes Counties, had several new wells. Among the important wells were T. B. Slick's No. 2 NW cor. NE SE, Section 3-9-9, 500 bbls. from sand at 3,283-3,301 feet; Phillips Petroleum Co.'s No. 1 Arber, C NW NE SE, Section 3-9-9, topped sand 3,382, oil at 3,287, total depth 3,301 feet, making 550 bbls. a day; Amerada Petroleum Corp.'s No. 1 Harjo, C SW SW SW, Section 36-10-9, on the east edge of the field, making 1,000,000 feet of gas from sand at 3,349 feet. T. B. Slick's No. 1 Bruner, C NE NW NW, Section 2-9-9 was getting oil at 3,327 feet, and drilling in.

The Southwestern Petroleum Co.'s No. 1 Bagwell, NW cor. SE, Section 3-14-5, in Lincoln County, topped sand at 3,437 feet, and was making 50 bbls. at 3,463 feet, when attempts to deepen it resulted in drowning the well at 3,466 feet. The well is being plugged back.

The Texas Co.'s new well in the Atlantic Pool, which proved such a disappointment when it went dead on the second day was in the NE cor., Section 29-25-8, and found the sand at 2,676 feet, with first oil at 2,682 feet. It was drilled to a total depth of 2,687 feet.

The Magnolia Petroleum Co.'s No. 4 Muller, C NE NW NW, Section 4-22-3, in the Watchorn Pool, Pawnee County, topped the Wilcox at 4,066 feet and got first oil at 4,073 feet; from a total depth of 4,090 feet it was making 500 bbls.

Other Completions

In the Tonkawa Field, Noble County, the Comar Oil Co.'s No. 12-W. Gaume, C SE SW NE, Section 2-24-1w, in the southeast end of the present producing area of the field, found sand at 4,033-53 feet, and made 424 bbls. the first 10 hours. The same company's No. 11-W. Gaume, C NW SW NE, Section 2-24-1w, made 1,217 bbls. the first 18 hours from sand at 4,039-63 feet. In the next section west, the Comar Oil Co.'s No. 10-W, Carmichael, C NE SE NE, Section 3-24-1w, had a show of oil at 4,315 feet and drilled into water.

In the Wewoka Field, Seminole County, Ramsey's No. 1 Bowlegs, C NW NW NW, Section 31-8-8, found sand at 3,385 feet, and at 3,420 feet was making oil with 50 per cent cutting, when the well went entirely to water.

In the Cromwell Field, Seminole County, the Sinclair Oil & Gas Co.'s No. 1 Buckner, C NE NE SE, Section 17-10-8, the farthest east well in the field, had a show of oil and gas at 3,560 feet. The Mutual Oil Co.'s No. 1, SW cor. SW SE, Section 33-11-8, was making 45,000,000 feet of gas from sand at 3,290-3,310 feet, and was preparing to deepen after moving the boiler back. The big pipe parted while trying to pull. The well encountered sand at a much shallower depth than was expected, and doubt has been expressed relative to its possibilities of making anything but gas. The Gypsy Oil Co.'s No. 8 Yarhola, NE cor. NW SW, Section 3-10-8, found sand at 3,395 feet and at 3,420 feet was making 45 bbls. an hour. The Sinclair Oil & Gas Co.'s No. 1, SW cor. Section 34-11-8, found sand at 3,373-3,428 feet, and was making 60 bbls. an hour. The Roxana Petroleum Corp.s No. 5, NW cor. NE SW, Section 3-10-8, was making 120 bbls. an hour from sand at 3,358-3,424 feet.

In the Braman Pool, Kay County, the Comar Oil Co.'s No. 1 McCormick, C NW NW SE, Section 21-29-1w, was making 697 bbls. from sand at 2,061-63 feet.

Burbank Production

Average production of the Burbank Field during the week ended January 21, was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	225	9,334
Cosden Oil & Gas Co.	105	2,879
Comar Oil Co.	7	112
Devonian Oil Co.	16	152
Gardner Petroleum Co.	20	419
Gypsy Oil Co.	196	4,536
Kewanee Oil & Gas Co.	25	449
Lorraine Petroleum Co.	15	153
Laurel Oil & Gas Co.	16	196
Midland Oil Co.	37	1,240
Mid-Kansas Oil & Gas Co.	40	1,443
Peters & Oilphant	2	168
Phillips Petroleum Co.	113	10,065
Phillips Petroleum Co. and Delmar Oil Co.	16	1,490
Phillips Petroleum Co. and Skelly Oil Co.	176	4,550
Prairie Oil & Gas Co.	106	2,814
Producers & Refiners Corp.	29	469
Producers & Refiners Corp.	29	409
Simons-Moore et al	29	262
Sinclair Oil & Gas Co.	146	2,628
Skelly Oil Co.	22	985
Tidal-Osage Oil Co.	43	708
The Texas Co.	10	672
Twin State Oil Co.	24	1,027
Total	1,472	47,158
—Kay County Extension—		
George Bole	3	233
Carter Oil Co.	11	1,168
Comar Oil Co.	19	954
Cosden Oil & Gas Co.	16	1,133
Gypsy Oil Co.	19	484
Laurel Oil & Gas Co.	5	249
Mid-Kansas Oil & Gas Co.	10	941
Phillips Petroleum Co.	31	3,645
Prairie Oil & Gas Co.	4	248
Pure Oil Co.	5	356
Roxana Petroleum Corp.	8	302
Dye-Tomlinson et al	8	589
Skelly Oil Co. and Phillips Petroleum Co.	20	476
Sinclair Oil & Gas Co.	5	177
The Texas Co.	16	264
Twin State Oil Co.	15	608
Total	195	11,827
Grand total	1,667	58,985
Total last week	1,666	59,478
Difference	1	493

Daily average pipe line runs for the same period were as follows: Gulf Pipe Line Co., 6,808 bbls.; Delmar Oil Co., 745; Cosden Oil & Gas Co., 5,405; Kay County Pipe Line Co., 3,296; Osage Pipe Line Co., 211; Oklahoma Pipe Line Co., 13,981; Prairie Pipe Line Co., 3,429; Sinclair Oil Co., 2,805; Moore Refining Co., 1,085; Standish Pipe Line Co., 14,438; Empire Pipe Line Co., 1,928; Mid-Kansas Oil & Gas Co., 2,410; Twin State Oil Co., 908; Ozark Pipe Line Co., 1,536.

Tonkawa Production

Daily average production of the Tonkawa Field during the week ended January 21, was as follows:

Company—	Wells	Bbls.
Amerada Petroleum Corp.	38	9,882
Blackwell Oil & Gas Co.	33	3,941
Carter Oil Co.	4	148
Champlin Refining Co.	2	14
Champlin Refining Co. and Twin State Oil Co.	1	10
Comar Oil Co.	352	24,174
Cosden Oil & Gas Co. and Marland Oil Co.	18	225
Gypsy Oil Co.	106	19,305
Healdton Oil & Gas Co.	28	1,249
Wentz Oil Corp.	47	12,705
McMan Oil Co.	1	3
Pennok Oil Co.	32	1,226
Prairie Oil & Gas Co.	12	524
Sinclair Oil & Gas Co.	1	14
T. B. Slick and Comar Oil Co.	36	5,609
Southwestern Petroleum Co.	15	567
The Texas Co.	6	1,764
White Eagle Oil & Refining Co.	7	129
Total	739	99,554
Total last week	736	99,257
Difference	3	297
Deep sand only—		
Comar Oil Co.	24	25,472
T. B. Slick and Comar Oil Co.	7	4,237
Blackwell Oil & Gas Co.	4	4,146
Wentz Oil Corp.	5	10,862
Pennok Oil Co.	7	6,557
Gypsy Oil Co.	13	17,622
Amerada Petroleum Corp.	7	9,316
Phillips Petroleum Co.	1	1,261
The Texas Co.	1	160
Total	69	79,633
Total last week	69	79,642
Difference	..	9

Daily average pipe line runs from the Tonkawa Field during the same period averaged as follows: Kay County Gas Co., 28,629 bbls.; Ozark Pipe Line Co., 15,900 bbls.; Gulf Pipe Line Co., 12,509; Champlin Refining Co., 15,155; Bolene Refining Co., 3,154; Globe Refining Co., 3,506; The Texas Co., 1,746; Producers & Refiners Co., 1,378; Oklahoma Pipe Line Co., 148; Empire Pipe Line Co., 7,093; Cosden Pipe Line Co., 1,974; Tonkawa Refining Co., 699; Moore Refining Co., 4,844; Illinois Refining Co., 2,801.

Output of Other Areas

Production of some of the other Oklahoma fields were as follows, as of the week ending January 21: Cromwell, 31,610 bbls. from 252 wells; Gilcrease-Papoose, 45,360 from 90 wells; Wewoka, 10,780 bbls. from 103 wells; Stroud, 2,567 bbls. from 66 wells; South Weleetka, 1,455 bbls. from 17 wells; Watchorn Pool, Pawnee County, 7,428 bbls. from 10 wells.

In the Papoose Field

The Cosden Oil & Gas Co.'s No. 7 Thompson, C NE NW NE, Section 3-9-9, in the Papoose Field, Hughes County, got gas at 3,263-3,290 feet and oil at 3,295-3-316 feet, and was making 1,500 bbls. The same company's No. 10 Thompson, C NW NW, same section, made 35,000,000 feet of gas at 3,000-85 feet, and was mudded off. T. B. Slick's No. 3 Parks, C SW NE NE, Section 3-9-9, was making 1,000 bbls. from sand at 3,335-57 feet. The same owner's No. 4 Parks, C SE NE NE, Section 3-9-9, was making 1,650 bbls. from sand at 3,-288-3-314 feet. The Foster Investment Co.'s No. 3 Tiger, C NE NW NE, Section 4-9-9, was making 1,267 bbls. from sand at 3,292-3,321 feet.

New and drilling operations in the Papoose Pool include T. B. Slick's No. 4 Parks, C SE SE NE, Section 3-9-9, drilling at 900 feet; same owner's No. 3 McKay, C NW NW SE, Section 3-9-9, 615 feet; No. 4 McKay, C NE NE SW, Section 3-9-9, 120 feet; E. L. Robinson and the Amerada Petroleum Corp.'s No. 6 Carter, C NW NE NW, Section 4-9-9, rig on ground; Transcontinental Oil Co.'s No. 2 C NE NE NE, Section 5-9-9, drilling at 3,060, in sand stopped at 3,010 feet making 3,000,000 feet of gas. T. B. Slick's No. 6 Bruner, C NW SE NW, Section 2-9-9, drilling at 525 feet; same owner's No. 7 Bruner, C NE SW NW, Section 2-9-9, drilling at 250 feet; No. 9 Bruner, C SW SW NW, Section, 2-9-9, rigging up; Independent Oil & Gas Co.'s No. 6 Alexander, C NE SW NE, Section 2-9-9, rig on ground; Cosden Oil & Gas Co.'s No. 9 Thompson, C SW NW NW, Section 3-9-9, rig up; Phillips Petroleum Co.'s No. 2 Arbor, C NE NE SE, Section 3-9-9, drilling at 300 feet; T. B. Slick's No. 3 Parks, C NE SE NE, Section 3-9-9, drilling at 580 feet.

McIntosh County

C. O. Sargent's No. 2 McIntosh, SW cor. Section 29-11-14, McIntosh County, was making 2,500,000 feet of gas from sand at 2,995-98 feet and drilling ahead at 3,000 feet.

Okmulgee County

E. J. Lambert's No. 5 Bruner, CNL SW SE, Section 7-13-15, in Okmulgee County, was shut in for 250,000 feet of gas at 2,185-95 feet. T. C. Mueler's No. 1 Hightower, CEL SE NW SE, Section 25-14-12, was dry at 2,750 feet. The Preston Oil Co.'s No. 1 Sneed, SE cor. SW SW, Section 4-14-13, had a hole full of water from sand at 1,597-1,623 feet, and was drilling at 1,700 feet. E. D. Misner's No. 8 Love, SE cor. NW NE, Section 16-14-14, was dry at 1,812 feet. The Eastern Oil Co.'s No. 7 Berry, CWL NE SW, Section 25-13-11, was making 400 bbls. from sand at 2,457-61 feet. The same company was rigging up No. 8, NE cor. SW, Section 25-13-11, The Denver Producers & Refiners Corp.'s No. 4 Thomas, CEL SE NE, Section 32-13-11, topped sand at 3,215 feet, and was drilling at at 3,220 feet. It had a 30-bbl. show. C. R. King's No. 1 Herrod, CW cor. NE NW, Section 14-11-13, was a dry hole at 2,412 feet.

Jackson & Wise had a machine rigged up for No. 6 Grayson, CWL SE SW, Section 3-15-11. The Sheridan Oil Co.'s No. 2 Grayson, CNL NW SW, Section 3-15-11, was drilling at 600 feet. The Shaffer Oil & Refining Co.'s No. 3 Carolina, C NW SE SE, Section 17-15-11, was spudding in.

E. D. Misner's No. 6 Love, SE cor SW NE, Section 16-14-14, was shot with 100 quarts in sand at 800-817 feet, and was good for 10 bbls. The same owner was rigging up No. 7 Love, NE cor. SW NE, Section 16-14-14. Jackson & King's No. 3 Hayes, NW cor. SE, SW, Section 11-13-12, was shut down at 1,660 feet. Detrick and others had a rig up for No. 1 Shepard, SW cor. NW SW, Section 20-13-12. The Eagle Picher Lead Co.'s No. 1 Webster, NE cor. NW NW, Section 33-13-12, was drilling at 1,320 feet. The same company was spudding in No. 2 Webster, SW cor. NW NW, Section 33-13-12. The Shaffer Oil & Refining Co.'s No. 1 Coleman, SW cor. SE, Section 27-16-12, was rigging up. Lewis & Burton's No.

1 Grayson, SE cor SW SE SW, Section 6-12-12, was drilling at 2,800 feet.

Cromwell Field

The Southwestern Petroleum Co.'s No. 7 Wisner, C NE SW NE, Section 4-10-8, in the Cromwell Field, Okfuskee County, was making 33 bbls. per hour after drilling to 3,472 feet in sand topped at 3,417 feet. The Roxana Petroleum Co.'s No. 5 Brown, C NW SW SW, Section 10-10-8 got sand at 3,412-3,520 feet, and was swabbing 40 bbls. after a 50-quart shot. The Shaffer Oil & Refining Co.'s No. 1 Little, C SW NW NE, Section 10-10-8, topped sand at 3,312 feet and went out of sand at 3,452 feet, making 21,000,000 feet of gas and no oil. The 6-inch was run and Bradenheaded to go deeper. The Tidal-Osage Oil Co.'s No. 2 Curley, C NE SW SW, Section 14-10-8, was making 460 bbls. natural from sand at 3,495-3,541 feet.

The Pure Oil Co. had a rig on the ground for No. 4 Jackson, C NE SE SW, Section 33-11-8.

Burbank Operations

The Mid-Kansas Oil & Gas Co.'s No. 8 C NW SE NE, Section 26-27-5, in the Burbank Field, topped sand at 2,947 feet, and had 1,500 feet of oil in the hole from sand at 2,949-90 feet. The Phillips Petroleum Co.'s No. 13 NW cor NE, Section 18-27-6, topped sand at 2,948 feet, and reached bottom at 3,000 feet. It made 50 bbls. naturally, and was good for 150 bbls. after a 150-quart shot.

New operations included Skelly Oil Co.'s No. 2 CSL SE SW SW, Section 2-27-5, building rig; Lewis il Co.'s No. 3 CNL NW NE NE, Section 21-26-6, rig on ground; McCoach Petroleum Co.'s No. 1, NE cor. NW SE, Section 13-25-6, moving in tools.

Lincoln County

The Magnolia Petroleum Co.'s No. 1 Crooks, NW cor. NE, Section 3-14-5, in Lincoln County, topped sand at 2,628 feet, and was drilling ahead making 10,000,000 feet of gas. The Josey Oil Co.'s No. 1 Fields, SE cor. NE NE, Section 32-12-11, was spraying water from a depth of 2,940 feet and making 15,000,000 feet of gas. The same company's No. 1 Hawkins, NW cor. SE Section 33-12-11, was dry and abandoned at 3,710 feet.

The Pure Oil Co.'s No. 1 Pinkston, CSL SE SE NW, Section 1-15-6, was 2-27-5, building rig; Lewis Oil Co.'s No. No. 1 Oleson, NW cor. SW SW, Section 2-14-5, was drilling at 560 feet. The Atlantic Oil Producing Co. had a rig up for No. 2 Gray, C SW SW SE, Section 36-12-10. The Josey Oil Co. was spudding in No. 1 Carolina, NE cor. SE, Section 32-12-11, and had rigs up for No. 5 McCoy, NW cor SW, Section 33-12-11, and No. 6 McCoy, SW cor. NW Section 33-12-11.

Osage County

The New England Oil Co.'s No. 11, SE cor. SW SE SW, Section 19-25-9, Osage County, was making 25 bbls. after a 40-quart shot in sand at 2,274-77 feet. The Peters Petroleum Co.'s No. 3, NE cor. SE, Section 6-22-9, was dry and abandoned at 2,721 feet. C. B. Peters and others' No. 1 SW cor SE SW SW, Section 28-24-9, was dry at 2,210 feet. The Rex Pyramid Co.'s No. 1 SW cor. Section 4-23-9, was dry at 2,600 feet. The Tidal Oil Co.'s No. 18, SW cor. Section 13-22-10, was dry at 2,244 feet. Sheirick and others' No. 2, SE cor. SW, Section 28-21-10, pumped 21 bbls. from 1,899-1,907 feet along with 4 bbls. of water after two shots of 20 and 15 quarts.

Pawnee County

The Twin State Oil Co.'s No. 5 Flemming, CSL SW SE, Section 8-20-7, Pawnee County, found oil at 2,696-2,702 and sandy shale at 2,702-16 feet. It was swabbing 40 bbls. and was to have been shot.

The Westerly Oil Co.'s No. 6 Smith, SE cor. SW SW, Section 22-20-6, was drilling at 400 feet. J. L. Donahoe and others were building a rig for No. 2 Zoldoskie, C NE NW SE, Section 22-23-4.

Okfuskee County

Charles W. West's No. 1 Fixico, SE cor. Section 5-13-9, in Okfuskee County, was dry and abandoned at 4,060 feet. The Independent Oil & Gas Co.'s No. 1 Callahan, SW cor. NW SW, Section 21-13-9, was dry and abandoned at 3,910 feet.

The Tidal Oil Co.'s No. 1 Garrett, NW cor. SW SW, Section 2-11-11, was drilling at 1,452 feet. W. B. Pine's No. 4 Meyers, NE cor. SE NW, Section 3-11-11, was drilling at 1,480 feet. The Windsor Oil Co. No. 1 Ingram, SW cor. Section 14-11-11, was rigging up and No. 3 Holmes, SW cor. NE, Section 22-11-11, was drilling at 850 feet. Burke-Greiss and others were spudding in No. 1 Jackson, SW cor. Section 29-11-11.

Tonkawa Operations

The Wentz Oil Corp.'s No. 29 McKee, SE cor. SW, Section 34-25-1w, in the Tonkawa Field, Noble County, was shot with 15 quarts in sand at 4,316-26 feet, and made 1,612 bbls. The Phillips Petroleum Co.'s No. 4 Corrigan, NW cor. NE NE, Section 34-25-1w, was dry and abandoned at 4,124 feet. The Comar Oil Co.'s No. 8-W. Endicott, NE cor. NW SW, Section 35-25-1w, was completed with sand at 3,955-4,005 feet, making 1,993 bbls. natural.

The Comar Oil Co. was spudding in No. 24-W. Blubaugh, CNL SE SW, Section 2-24-1w. The same company's No. 25-W. Blubaugh, NE cor. SE SW, Section 2-24-1w, was spudding in at 107 feet. No. 4-W. Blubaugh, CNL NE NW SE, Section 2-24-1w, was spudding in at 103 feet.

Braman Pool

The Comar Oil Co.'s No. 3 McCormick, NE cor, SE, Section 21-29-1w, in the Braman Pool, Kay County, was spudding at 170 feet. The same company's No. 4 McCormick, SW cor. NW SE, Section 21-29-1w, was spudding at 15 feet and No. 3 Duncan, NE cor. SE SW, Section 21-29-1w, was spudding at 75 feet.

Kay County

The Carter Oil Co. was moving in tools for No. 1, a wildcat, NW cor. NE, Section 10-25-2w, in Kay County.

Garfield County

The Sinclair Oil & Gas Co.'s No. 13 Kisner, CNL NE NW NE, Section 19-22-3w, Garfield County, was pumping 50 bbls. from sand at 1,245-50 feet. The same company's No. 7 Crews, CNL NW SE, Section 30-22-3w, was pumping 105 bbls. from sand at 2,021-33 feet. The same company's No. 8 Morrison, SW cor. SE SW NW, Section 31-22-3w, was pumping 40 bbls. from sand at 2,156-67 feet.

The Sinclair Oil & Gas Co.'s No. 2 Hartley, SW cor. NW, Section 18-22-3w, was being rigged up to deepen; old depth 1,640 feet. The same company had a rig on the ground for No. 2 Burns, NW cor. NE SE, Section 30-22-3w, and a rig up for No. 18 Walker, NE cor. SE NE, Section 13-22-4w. The Empire Gas & Fuel Co.'s No. 19 Hatson, SE cor. NW NW, Section 25-22-4w, was underreaming at 1,482 feet.

Greer County

Norton & Neal's No. 1 Wild, SW cor. NE NW, Section 17-7-21w, in Greer County, was dry and abandoned at 1,200 feet.

Garvin County

The Magnolia Petroleum Co.'s No. 1 Harvey, C SE SW NW, Section 11-1-3w, Garvin County, was drilling at 2,265 feet.

Kansas Oil Field News

By C. D. Lockwood

Wildcatting activity claimed most of the interest in the Kansas fields during the past week when several test wells reported shows of oil and gas. Developments in the Rainbow Bend Field also increased in importance when the Waite Phillips Co. brought in a well good for 2,830 bbls. the first 24 hours, extending the field one-half mile south.

Most interesting of the wildcats was the Watchorn Oil & Gas Co.'s deep test in Clark County. The well is No. 1 Morrison, SE cor. NE SE, Section 20-32-21w. The Wilcox was reached at 4,870 feet, where a show of oil and gas was had with water of undetermined origin in the hole. The last reports available stated that attempts were being made to dry up the water to test.

C. E. Roth and others' No. 1 Hannah, CWL NW SE, Section 4-30-8, in Elk County, had 1,600 feet of oil in the hole from sand at 2,116-17 feet.

The Evangeline Oil Co.'s No. 1 Ellis, SW cor. NE, Section 26-23-11, Greenwood County, had a show for a small well in sand at 1,915-32 feet, and was to have been shot.

McNab & Burt had a nice show in their No. 1 Stubbs Land Co., SW cor. SE, Section 8-30-2, Sumner County, at 3,145-46 feet, and was underreaming a 100-foot caving.

The Waite Phillips Co.'s No. 5 Johnson, SW cor. SE, Section 20-33-3, which extended the producing zone of the Rainbow Bend Field in Cowley County, one-half mile south of the previous producing area, found the sand at 3,216 feet, and at 3,248 feet, started flowing at the rate of 122 bbls. an hour, and at the end of the first 24 hours had made 2,830 bbls.

A summary of operations in Kansas for the week ended January 17 showed 47 new locations, 68 completed rigs, 196 drilling wells, 171 shut down and 17 completions of which 6 were oil wells, 1 gas well and 10 dry holes.

Cowley County

The Waite Phillips Co.'s No. 2 Bachus, C NE SE NW, Section 20-33-3, in the Rainbow Bend Field, Cowley County, was completed at 3,276 feet, sand at 3,239-74 feet, and made 740 bbls.

The Marland Oil Co.'s No. 3 Wood, C SE SE NE, Section 9-33-3, in the Graham Pool, was pumping 60 bbls. of oil and 10 bbls. of water from sand at 2,565-72 feet.

The Marland Oil Co. & Neely's No. 1 Rockwell, C SW SW NE, Section 13-32-4, topped sand at 2,545 feet, and at 2,549 feet was making 3,000,000 feet of gas and spraying oil. The J. A. Hull Co.'s No. 1-B Lewis, SE cor. NW, Section 24-32-4, was rigging up.

A. D. Norton's No. 1 DeBard, C SW SW NE, Section 35-34-3, was spudding in.

The Texas Co. was spudding in No. 1 Staggers, C NE NW NE, Section 13-32-3. The Roxana Petroleum Corp. was building rigs for No. 2 Spruens, C SE NW SE, Section 9-33-3, No. 3 Spruens, C NE NW SW, Section 10-33-3, and No. 4 Spruens, C SE NW SW, Section 10-33-3. The Waite Phillips Co. was building a rig for No. 11 Wertman, C NW SE NW, Section 20-33-3. The J. A. Hull Co. had a rig up for No. 1-B Lewis, SE cor. SW NW, Section 24-32-4.

Sumner County

The Marland Oil Co. had three wells spudding in the Sumner County, No. 1 Millick, SE cor. NW, Section 14-34-2, No. 1 Lindsay, SE cor. NW, Section 22-34-2, and No. 1 Warner, C NW SW SE, Section 23-34-2. McKenna and others' No. 1 Stubbs, SW cor. SE, Section 8-30-2e, was underreaming the 6⅝-inch casing at 2,930 feet.

Greenwood County

McGinnis & Bitler's No. 3 Teeter, C SW NE NW, Section 15-23-9, Greenwood County, topped sand at 2,303 feet, and was making 200 bbls. drilling at 2,368 feet. The Tidal Oil Co.'s No. 4 South, C SE NE SE, Section 22-22-11, found sand at 1,905-71 feet, and was good for 15 bbls. after a 100-quart shot. Pryor & Lockhart's No. 2 Derbyshire, SW cor. NE SE, Section 13-22-10, was dry and abandoned at 2,180 feet. The Skelly Oil Co.'s No. 1 Kipfer, SE cor. NW, Section 13-22-10, was dry at 2,286 feet. The Syndicate Oil Co.'s No. 1 Kipfer, SW cor. SE NE, Section 13-22-10, was pumping 575 bbls. from sand at 2,100-39 feet several days after having a 110-quart shot.

Rogers & Bitler's No. 1 Nuttle, C SW SW SE, Section 10-23-9, was drilling at 750 feet. McGinnis & Bitler had a rig

(Continued on Page 235)

The Echo Oil Co.'s No. 4 Burell, NW cor. NE SW, Section 7-20-13, in Tulsa County, was good for 25 bbls. after a 110-quart shot. The Superior Oil Corp.'s No. 3 Blackmore, CNL NW SW SE, Section 26-21-13, was dry and abandoned at 1,600 feet. I. L. Corbin's No. 2 Kirt, SW cor. SE SW, Section 36-21-13, was a dry hole at 1,632 feet. W. H. Pierce's No. 1 Sanders, C SE NW NE, Section 2-20-13, found a gas sand at 1,260-62 feet, and shut in a 13,000,000-foot flow. The Stebbins Oil & Gas Co. got 4,000,000 feet of gas in sand at 1,743-48 feet in No. 4 Kiefer, CSL SE SW SW, Section 31-19-12.

The Bruner Oil Co.'s No. 2-A. Partridge, CNL SE SW, Section 5-19-12, Tulsa County, was making 50 bbls. from sand at 2,086-87 feet.

The Shaffer Oil & Refining Co.'s No. 4 Partridge, C NE NW SW, Section 5-19-12, was rigging up. W. H. Pierce's No. 1, C SW SW NE, Section 2-20-13, was drilling at 1,200 feet. The Halsell Oil Co.'s No. 3 Vernon, CEL SE NE NW, Section 2-20-13, was drilling at 900 feet. The General Petroleum Engineers Co.'s No. 1 Cooper, NE cor. SW, Section 33-20-14, was drilling at 400 feet.

The Mayfield Drilling Co.'s No. 1 Daniels, C NW NW SE, Section 20-21-14, was drilling at 1,200 feet.

Payne County

The Josey Oil Co.'s No. 4 Ellis, NW cor. Section 1-18-5, in Payne County, was making 8,000,000 feet of gas from sand at 1,020-25 feet, and was shut down. It was announced that the well would be deepened later.

Kingfisher County

Prince & Harley's No. 1 Bastin, CEL NE SE, Section 31-15-7w, Kingfisher County, was dry and abandoned at 3,012 feet.

The Josey Oil Co.'s No. 3 Busby, NE cor. NW, Section 2-18-5, was drilling at 2,765 feet. The same company's No. 3 Lee, SW cor. SE, Section 35-19-5, was drilling at 3,160 feet.

Creek County

T. Cushing and others' No. 1 Crabtree, NE cor. SE SW NE, Section 11-17-8, Creek County, had a 15-bbl. show at 2,635-55 feet, and was to have been shot. The Olean Petroleum Co.'s No. 7 Washington, NW cor. SW SW, Section 32-17-8, was making 150 bbls. from sand at 3,482-3,517 feet.

The Independent Oil & Gas Co.'s No. 1 Harrison, NE cor. SW, Section 36-16-10, was dry at 3,190 feet. The Shaffer Oil & Refining Co.'s No. 1 SW cor. NE Section 17-14-8, had a hole full of water from sand at 3,908-12 feet, and was plugged back to 3,386 where it was pumping 10 bbls. naturally from sand topped at 3,336 feet. The Phillips Petroleum Co.'s No. 19 Tiger, NE cor. NW SW, Section 4-15-9, was dry at 2,885 feet. The Atlantic Oil Producing Co. and Turman's No. 1, SE cor. NW SE, Section 17-15-9, was dry at 3,722 feet. Donnelly and Hall's No. 1 Thompson, NE cor. 19-14-10, got 5,000,000 feet of gas at 750-80 feet, and was to Bradenhead and go deeper.

Jackson & Wise were spudding in No. 3 Hendrickson, SE cor. NE NW, Section 21-16-9. The Jomack Oil Co. was spudding in No. 10-A. Carr, C NW SE NE, Section 26-16-9.

Muskogee County

George Wilson had a machine up for No. 3 Tucker, C SW SW SE, Section 16-15-14, Muskogee County. E. A. Huchinson's No. 1 Lee, SE cor. SW SE NW, Section 35-15-16, was drilling at 1,614 feet. M. E. Johnson's No. 1 Harris, CSL NW NW NE, Section 30-14-9, was shut down at 880 feet.

Hughes County

E. P. Hawkins had a rig up for No. 1 C NE NE NW, Section 22-9-10, in Hughes County.

Carter County

The Humble Oil & Refining Co.'s No. 1 Hales, C NE NE SE, Section 28-1s-3w, Carter County, topped sand at 3,295 feet and was drilling at 3,295 feet in sand and was making 300 bbls. The Tidal-Osage Oil Co.'s No. 3 Parsons, C SW SW NE, Section 28-1s-3w, was pumping 100 bbls. from sand at 3,396-3,404 feet. The Twin State Oil Co.'s

(Continued on Page 245)

Taking the Stretch Out of Oil Well Chain

REX *Genuine Chabelco 1240 —the original notched-out oil well chain.*

At left: strand of REX *genuine Chabelco 1030.*

MAINTENANCE of Pitch is what the Chain Engineer calls it, but the oil field man knows Rex Chabelco as the chain that will not stretch, that runs true over the sprockets month after month.

Every part of every link is built to keep the chain from stretching. The side bars, for instance, are made from special analysis open hearth high carbon steel.

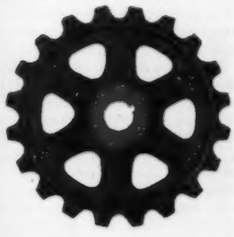
The pin and bushing holes are multiple punched and broached, making them smooth, even and exact. No ridges there to cause the chain to stretch. Casehardened pins and bushings, hard and smooth where the wear comes, with tough insides, will not bend, so they also prevent stretch.

Bushings and pins are forced into and locked in both side bars. No play around the holes. The wear will come between bushing and pin only.

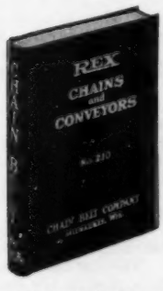
The rollers are special heat-treated steel, strong and tough.

That's why the sprocket fit lasts.

Rex Safety Set Collar made of Certified Malleable Iron. Though stronger and more durable, it weighs only about half as much as a cast iron collar. Typical of the complete Rex transmission line.



Rex Temperim Sprocket Wheels have teeth and rim hardened to provide a harder surface of a tougher and more durable nature than the ordinary grey iron wheel.



The Chain Belt No. 210 Catalog and Engineering Data Book shown above consists of 512 pages. It lists in detail all information for the ordering and use of Rex Chain, Conveyors and Transmission Machinery.

GET GENUINE REX 1030 AND 1240

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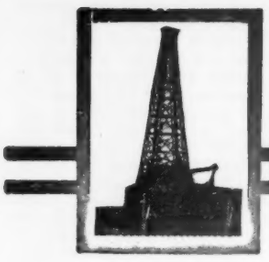


North-Central Texas Field

By Staff Correspondent

Production declines 2,210 bbls. Completions were nearly a third more, Archer County again leading with 31 and Wichita having 15. South Archer and North Young Counties have number of wells nearing completion. Texon Oil & Land Co. drills Reagan County well mile deep. South Archer purchase by Texas.

FORT WORTH, Tex., Jan. 26.—The announcement by the Prairie Oil & Gas Co. of an advance in the price of crude oil was the best news that has come to the North Texas oil man in many, many months. Within a few hours time the new posting was followed by the Gulf Pipe Line Co., the Humble, The Texas Co., Magnolia, Sinclair Crude Oil Purchasing Co. and the United Producers Pipe Line Co. The new posting returns the purchasing schedules of practically all the companies to the old plan of five grades, the grade of 39 gravity and above having been restored in the original announcement by the Prairie. The schedule now stands as follows: Below 30 gravity $1.00, 30 to 32.9 gravity $1.15, 33 to 35.9 gravity $1.35, 36 to 38.9 gravity $1.50 and 39 gravity and above $1.60. All the companies are now adhering to this schedule with the exception of the Humble Pipe Line Co., which recognizes only four grades in the Moran Field of Shackelford County. In this field the Humble pays $1.50 for everything above 36 gravity. In other sections of the territory the Humble has a schedule of five grades.

The advance in crude prices was not altogether unexpected by North Texas operators, especially since the Wortham Field in Central Texas did not develop so rapidly as an overproduction menace as had been expected. Then, too, the premiums that some of the independent small refineries have been paying for some time led to the opinion that the price schedule could not be maintained very long.

Purchase by The Texas Co.

The purchase by the Texas Co. of an extensive producing property in the south Archer County district is one of the largest deals of the kind made in the North Texas territory for many months. The property was purchased from the Knight & Hines-Panhandle-Consolidated Oil Co. interests and is in what is known as the Knight-Hines and the Ragle Pools of south Archer. The consideration was $1,000,000 in cash and other considerations which will, it is said, run to a minimum of $500,000 and probably a maximum of $750,000.

The property purchased is recognized as one of the most valuable anywhere in the Archer County fields. It consists of 865 acres of leases, together with 31 producing wells making approximately 2,400 bbls. daily. The leases are out of the Bearden, C. L. Davis and the Ragle lands. The Panhandle Refining Co. held a half interest in the properties and the other half interest was held by Knight & Hines are individual operators and the Consolidated Oil Co. which is composed of Knight and Hines and W. C. Allen.

Production Declines

Production in North Central Texas registered a decline of 2,210 bbls. during the week. The total is 129,105 bbls. compared with a total last week of 131,315 bbls. The principal losses were in the Burkburnett Pool and the Iowa Park territory, including Archer County. Burkburnett lost 1,775 bbls., Iowa Park registered a decline of 2,875 bbls. and Eastland County lost 5 bbls. Electra, Stephens County and the wildcat districts all showed gains. Electra gained 135 bbls., Stephens County gained 290 bbls. and the gain in the wildcat districts totaled 2,020 bbls.

Completions this week were nearly a third more than during the previous week. Total completions were 69, compared with 48 for the week before. There were 40 producing oil wells, 26 dry holes and 3 gas wells. Out of the 48 completions last week 29 were oil wells, 18 were dry holes and 1 was a gas well.

New production this week is only 5,305 bbls. from 40 producers while last week the total new production was 7,630 bbls. from 29 producers. However, last week's completions included two wells that had initial production of more than 2,000 bbls. each. The average per well for the 40 new oil wells this week is a little more than 132 bbls., which is a rather high average. This week's completions also include 3 gas wells with a total of 22,000,000 feet of gas daily. The largest gas well is the Texhoma Oil & Refining Co.'s Maddox No. 1 in Montague County which is reported making 21,000,000 feet of gas daily.

Half in Archer County

This week Archer County had 31 completions, again nearly half the total for the entire territory. In the county there where 21 oil producers and 10 dry holes. New production in Archer was 3,410 bbls., an average per new well of more than 152 bbls. Wichita County recorded 15 completions, 8 oil wells and 7 dry holes. New production in the county amounted to 450 bbls. Young County had six completions, two oil producers making 425 bbls. and four dry holes. Stephens County recorded only four completions, one an oil well making 40 bbls., two dry holes and one gas well making 500,000 feet of gas daily. Eastland County reported only three completions, two of which were oil wells with a total new output of 175 bbls. The other completion was a dry hole. The wildcat districts had 10 completions this week compared with 12 for the previous week. This week there are six oil producers, two dry holes and two gas wells. New production amounts to 805 bbls. and there is also 21,500,000 feet of gas daily from the wildcat fields.

The south Archer and north Young County area has its usual number of wells nearing completion. The Shamrock Oil Co.'s No. 5-C Richardson in south Archer is estimated to be making 100 bbls. from the sand at 1,300 feet and the Swastika Oil Co.'s No. 3 Neal, also an Archer County operation, is estimated to be good for 100 bbls. at 1,090 feet, although not completed. Wollett and others have a producer in their No. 2 Griffin, estimated to be making 150 bbls. from sand at 1,310 feet, while being completed.

North Young Producers

In north Young County, which is closely connected with the producing areas of south Archer the Camp Oil & Gas Co. has what appears to be a small producer in its No. 1 Campbell. The hole has been giving some trouble but is estimated to be making 30 bbls. daily from sand at 965 feet. Murchison and others, also in Young, have a prospect for a producer in their No. 1 Schlegel. The well is now reported to be making about 50 bbls. of oil and approximately the same amount of water from the sand at 1,215 feet. The Simms Oil Co.'s No. 2 Carpenter is estimated to be good for 100 bbls. a day from the 1,035-foot pay level.

In Hutchinson County there are two operations showing for extensive gas production, while drilling is proceeding in an effort to reach the oil producing level. These are Barnum and others' No. 1 Johnson, which is reported making 60,000,000 feet of gas at 2,840 feet, and the Dixon Creek Oil Co.'s No. 1 Smith, which is making about 50,000,000 feet of gas daily from 2,885 feet.

In Carson County, also Texas Panhandle district, the American Refining Co.'s No. 2 Burnett has reached the pay level and is producing from the customary formation for that district, the granite wash. The well, while not completed, is estimated to be making about 200 bbls. daily from a depth of 2,978 feet.

In Reagan County, southwest Texas, the Texon Oil & Land Co. has drilled in No. 1 Group 2 well on University lands to the depth of about an even mile. According to the latest drilling reports the drill had reached 5,260 feet. This is by far the deepest hole ever drilled in that section of the State.

The Petroleum Producers Co. of Wichita Falls during the past week is reported to have purchased from Harvey Gardner and associates a lease of 10 acres out of the Kunkel farm for a consideration of $20,000 or more than $1,000 per acre. The lease is not on a producing basis. It is located in the Carey Pool, south Archer County.

PRODUCTION REPORT
Week Ending January 22, 1925

Burkburnett	
Barkley & Meadows	625
Humble Oil & Refining Co.	480
Gulf Production Co.	590
Magnolia Petroleum Co.	1,920
McMan Oil Co.	265
Panhandle Refining Co.	305
Prairie Oil & Gas Co.	15
Sinclair Oil & Gas Co.	70
The Texas Co.	515
Texhoma Oil & Refining Co.	495
Miscellaneous	7,215
Total	12,505
Electra	
Empire Gas & Fuel Co.	1,055
Humble Oil & Refining Co.	130
Griswold Oil Co.	245
Gulf Production Co.	915
Magnolia Petroleum Co.	4,135
McMan Oil Co.	180
Panhandle Refining Co.	80
The Texas Co.	3,895
Texhoma Oil & Refining Co.	175
Miscellaneous	5,650
Total	16,660
Iowa Park, Etc.	
Griswold Oil Co.	70
Gulf Production Co.	30
Humble Oil & Refining Co.	
Magnolia Petroleum Co.	440
Panhandle Refining Co.	60
Texhoma Oil & Refining Co.	35
Miscellaneous	3,135
Archer County	
Empire Gas & Fuel Co.	635
Griswold Oil Co.	365
Gulf Production Co.	2,415
Humble Oil & Refining Co.	275
Magnolia Petroleum Co.	720
Panhandle Oil & Refining Co.	2,890
Prairie Oil & Gas Co.	1,315
The Texas Co.	690
Texhoma Oil & Refining Co.	2,590
Miscellaneous	24,935
Petrolia	
Gulf Production Co.	40
Magnolia Petroleum Co.	90
The Texas Co.	60
Miscellaneous	245
Total	40,105
Stephens County	
Empire Gas & Fuel Co.	45
Gulf Production Co.	1,330
Humble Oil & Refining Co.	925
Magnolia Petroleum Co.	830
Mid-Kansas Oil & Gas Co.	1,895
Prairie Oil & Gas Co.	950
Sinclair Oil & Gas Co.	190
The Sun Oil Co.	225
The Texas Co.	1,730
Texas Pacific Coal & Oil Co.	870
Miscellaneous	7,350
Total	15,140
Eastland County	
Gulf Production Co.	860
Humble Oil & Refining Co.	70
Magnolia Petroleum Co.	700
Mid-Kansas Oil & Gas Co.	180
Panhandle Refining Co.	325
Prairie Oil & Gas Co.	630
Sinclair Oil & Gas Co.	420
The Texas Co.	260
Texas Pacific Coal & Oil Co.	940
Miscellaneous	2,995
Total	6,570
Other Fields	
Strawn—	
Texas & Pacific Coal & Oil Co.	215
Miscellaneous	465
Moran—	
Empire Gas & Fuel Co.	65
Humble Oil & Refining Co.	310
The Texas Co.	135
Texhoma Oil & Refining Co.	140
Miscellaneous	1360
Coleman County—	
Miscellaneous	70
Brown County—	
Miscellaneous	915
Comanche-Eastland—	
Humble Oil & Refining Co.	200
Magnolia Petroleum Co.	1,335
Mid-Kansas Oil & Gas Co.	395
Sinclair Oil & Gas Co.	40
The Texas Co.	175
Texas Pacific Coal & Oil Co.	140
Miscellaneous	2,000
Young County—	
Gulf Production Co.	85
Sinclair Oil & Gas Co.	440

News from Fields of Canada

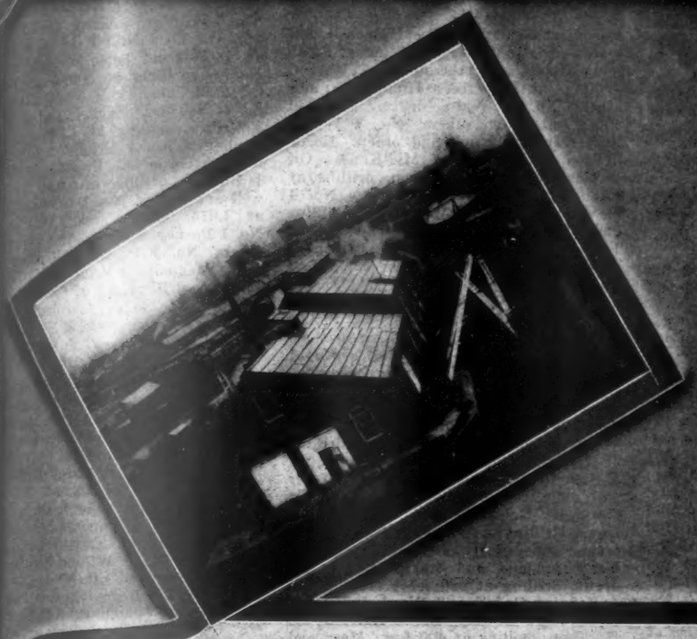
By Victor Lauriston

CHATHAM, Ont., Jan. 24.—In the Canadian West, extensive drilling operations are to be carried on this spring and summer by the Royal Canadian Oil Co., which holds considerable acreage in northern Montana and southern Alberta. It is understood the 1925 program includes the spudding in of five tests on acreage recently acquired from the Gordon Campbell interests; in addition to further drilling in southern Alberta, where the Sanctuary Oil Co., a subsidiary of the Royal Canadian, has an unfinished test in the Pakowki Lake area. Mr. Campbell will have charge of the entire operations on both the Montana and Alberta sides of the international boundary, and actual drilling will be undertaken as soon as the weather permits.

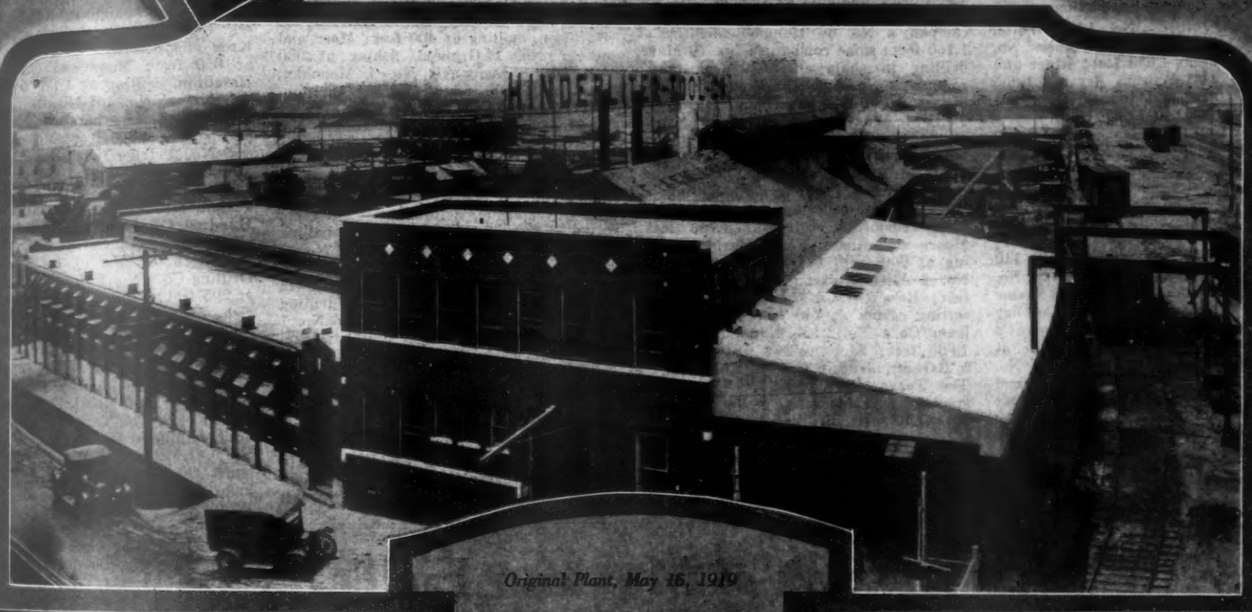
In east central Alberta, practically all the drilling outfits in the Irma-Wainwright are still shut down. The first tank car of crude from the Irma-Wainwright Field was shipped last week from Wainwright, being part of the production of British Petroleum No. 4 flowing well. The oil will be used, unrefined, for fuel purposes by the Canadian National railroads, in the oil-burning locomotives used on the Pacific section.

In the Ontario fields, a new development is reported in the old Tilbury Field, Kent County, near Fletcher, where the Stark & Spence interests of Detroit last year took over the Arthur Neath oil properties, including the Ball farm. This area was first developed about 18 years ago at the time of the discovery of the Tilbury Field, producing from an oil sand around 1,400 feet. Frank Elliott of Wellsville is stated to have drilled the first producers on the Ball farm, the property later passing from him to S. S. Reesman, now of Tulsa, and still later to Stern Brothers. Stark & Spence's No. 1 has just been finished on the Ball farm, about 300 feet east of the old production, and is reported to be making 10 bbls. a day or better from the 1,400-foot sand. Additional tests will be drilled by the new owners of the property.

In Norfolk County, the Dominion Natural Gas Co., which recently completed its No. 2 gasser in the new field between Maybee's Corners and Courtland has moved the outfit from No. 2 to a new location for No. 4 test, which will spud in within a few days. No. 3 is still shut down.



HINDERLITER TOOL CO. TULSA OKLA.



Original Plant, May 16, 1919

Present Home of the

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HINDERLITER TOOL COMPANY

TULSA, OKLAHOMA

Manufacturers of and Specialists in

DRILLING and FISHING TOOLS

Branches Located In Principal Oil Fields

Panhandle Oil & Refining Co..	175
The Texas Co.	40
Miscellaneous	3,635
Mitchell County	1,740
Reagan County	11,090
Jack County	25
Scurry County	45
Carson County	1,195
Hutchinson County	185
Callahan County	1,565
Wilbarger County	5,295
Total	33,875
Total last week	131,315
Total this week	129,105
Loss	2,210

Wichita County Completions

Texhoma Oil & Refining Co.'s No. 1 Jackson, dry at 1,850 feet; Art and others' No. 1 Terhune, 5 bbls. at 480 feet; Granite Oil & Gas Co.'s No. 6 Fisher, dry at 1,025 feet; same company's No. 7 Fisher, 5 bbls. at 850 feet; Hawkins and others' No. 2 Watkins, 100 bbls. at 1,766 feet; Joffee and others' No. 1 Waggoner, dry at 1,700 feet; Kruger and others' No. 10 Allen & Kemp, 110 bbls. at 1,640 feet; Magnolia Petroleum Co.'s No. 40 Rio Bravo, 60 bbls. at 1,780 feet; O'Neil and others' No. 1 Woodward, dry at 2,000 feet; Parker Brothers' No. 1 Hodge, dry at 1,830 feet; Perkins and others' No. 12 Burnett, 85 bbls. at 1,815 feet; Roxana Petroleum Corp.'s No. 1 Denny, 35 bbls. at 680 feet; Magnolia Petroleum Co.'s No. 6 Burnett, 50 bbls. at 1,590 feet; Wichtex Oil Co.'s No. 1 McFall, dry at 1,925 feet.

Archer County Completions

Carter and others' No. 14-E White, dry at 1,665 feet; Norton and others' No. 1 Andrews, dry at 1,530 feet; Riner and others' No. 4-A Wilson, dry at 1,655 feet; Robertson and others' No. 1-B White, 185 bbls. at 1,600 feet; Sheets and others' No. 1 Albright, dry at 1,540 feet; Burns and others' No. 1 Kunkel, dry at 1,515 feet; Clopton and others' No. 1 Harris, dry at 1,600 feet; Consolidated Oil Co.'s No. 1-C Davis, 95 bbls. at 1,075 feet; Gulf Production Co.'s No. 3-A Griffin, 65 bbls. at 1,290 feet; same company's No. 2 Monohan, 140 bbls. at 1,300 feet; same company's No. 3-A Nichols, 35 bbls. at 1,405 feet; same company's No. 4 Oil Investment Co., dry at 1,630 feet; the same company's No. 7 Oil Investment Co., dry at 1,610 feet; Eagle Creek Oil Co.'s No. 1 Cox, dry at 1,130 feet; Fisher and others' No. 2 Rogers, dry at 1,465 feet; Grisham and others' No. 6 Davis, 30 bbls. at 1,075 feet; Gwynn and others' No. 1 Rogers, 100 bbls. at 1,365 feet; same company's No. 5 Rogers, 125 bbls. at 1,275 feet; Humble Oil & Refining Co.'s No. 2 Wood, 10 bbls. at 1,310 feet; Lowery and others' No. 5 Harbison, 155 bbls. at 1,335 feet; Murchison and others' No. 10 Griffin, 115 bbls. at 1,300 feet; same company's No. 11 Griffin, 95 bbls. at 1,295 feet; same company's No. 7-B Harmel, 250 bbls. at 1,285 feet; Petroleum Production Co.'s No. 2 Hausler, 275 bbls. at 1,125 feet; same company's No. 3 Hausler, 300 bbls. at 1,135 feet; same company's No. 5 Hausler, 200 bbls. at 1,130 feet; Ray and others' No. 10 Hausler, 125 bbls. at 1,135 feet; Shamrock Oil Co.'s No. 1-A Goldsmith, 150 bbls. at 1,340 feet; Shaw and others' No. 1 Hausler, 400 bbls. at 1,145 feet; same company's No. 2 Hausler, 600 bbls. at 1,145 feet; Sun Oil Co.'s No. 4 Green, 60 bbls. at 1,085 feet.

Young County Completions

Monroe Production Co.'s No. 1 Cheney, dry at 3,005 feet; Murchison and others' No. 2 Gambrell, 135 bbls. at 1,210 feet; Nine Hundred Oil Co.'s No. 4 Benson, dry at 950 feet; Peters Oil Inc.'s No. 1 Sims, dry at 740 feet; Simms Oil Co.'s No. 1 Carpenter, 290 bbls. at 1,035 feet; Staley and others' No. 1 Thomas, dry at 1,460 feet.

Stephens County Completions

Buckeye Development Co.'s No. 8 Walker, 500,000 feet of gas at 3,205 feet; Corts and others' No. 1 Parks, dry at 4,000 feet; Schimmel and others' No. 1 Watson, dry at 3,435 feet; Texas Pacific Coal & Oil Co.'s No. 44 Binney, 40 bbls. at 1,745 feet.

Eastland County Completions

Dorothy Oil Co.'s No. 1 Elliott, dry at 3,500 feet; Magnolia Petroleum Co.'s No. 7 Harris, 160 bbls. at 1,455 feet; Westheimer and others' No. 8 Hamilton, 15 bbls. at 1,450 feet.

Wildcat Completions

Wilbarger County: Bridwell and others' No. 2 Dill, 145 bbls. at 1,285 feet; Oxford Oil Co.'s No. 1 Waggoner, 50 bbls. at 1,830 feet; Ray and others' No. 5 Bond, 150 bbls. at 1,320 feet; Wells and others' No. 2 Waggoner, 300 bbls. at 2,035 feet; Winnipeg Oil Co.'s No. 4 Bond, 155 bbls. at 2,060 feet.

Baylor County: McGregor and others' No. 1 Wallace, dry at 1,930 feet.

Clay County: Sullivan and others' No. 2 Scott & Ramsdell, 5 bbls. at 1,205 feet; Sommers and others' No. 1 Parker, dry at 1,300 feet.

Montague County: Texhoma Oil & Refining Co.'s No. 1 Maddox, 21,000,000 feet of gas at 795 feet.

Coleman County: Roth and others' No. 9 Overall, 500,000 feet of gas at 1,205 feet.

Wichita County Drilling

Baldwin and others' No. 1 Hefley, cleaning out at 1,070 feet; Magnolia Petroleum Co.'s No. 109 Reilly, setting casing at 1,200 feet; Art and others' No. 2 Terhune, drilling in rock at 420 feet; Hamon and others' No. 1-A McCarty, drilling at 1,230 feet; Hawkins and others' No. 3 Hawkins, drilling at 700 feet; Humble Oil & Refining Co.'s No. 4 Burnett, drilling at 400 feet; Maer and others' No. 1 Allen & Kemp, drilling at 1,505 feet; Magnolia Petroleum Co.'s No. 9 Abernathy, drilling at 710 feet; same company's No. 66 Honaker, drilling at 1,160 feet; same company's No. 10 Maer, drilling in shale at 1,530 feet; same company's No. 8 McMan-Waggoner, drilling at 1,780 feet; same company's No. 4-F Peer Waggoner, underreaming; same company's No. 8-A Waggoner, underreaming; same company's No. 9-A Waggoner, drilling at 840 feet; same company's No. 4-B Waggoner, drilling at 2,075 feet; same company's No. 2 Watkins, cementing casing at 1,755 feet; Moore and others' No. 2 Burnett, drilling at 600 feet; O'Donohoe and others' No. 4 Allen & Kemp, drilling at 1,500 feet; Ross Oil Co.'s No. 1 Waller, resetting casing at 740 feet; Ryan Petroleum Co.'s No. 24-A Nance, fishing at 1,860 feet; Section Two Oil Co.'s No. 5 Barnett, drilling in rock at 580 feet; The Texas Co.'s No. 298 Waggoner, spudding; Texhoma Oil & Refining Co.'s No. 7 Burnett, drilling at 1,585 feet.

Archer County Drilling

Archer Oil Co.'s No. 1 Dowlen, setting casing at 1,664 feet; Carter and others' No. 17-E White, drilling at 1,415 feet; Electra Gulf Oil Co.'s No. 1 Andrews, drilling in lime at 1,415 feet; Franklin and others' No. 2-B Parrish, has oil show at 1,550 feet; Haskell and others' No. 1 Moldrom, drilling at 1,295 feet; Hobbs and others' No. 5 Wilson, drilling at 605 feet; Humphries and others' No. 15 White, drilling at 1,230 feet; Jetter and others' No. 3 White, underreaming; Knox and others' No. 1 Wilson, underreaming; Mid-Kansas Oil & Gas Co.'s No. 1 Wilson, drilling at 1,430 feet; Oil Investment Co.'s No. 4 fee has oil show at 1,195 feet; Phillips and others' No. 5 Wilson, drilling at 1,415 feet; same company's No. 6 Wilson, drilling at 1,395 feet; Prairie Oil & Gas Co.'s No. 30-D Wilson, setting casing at 1,370 feet; Robertson and others' No. 7 White, drilling at 1,530 feet; Simms Oil Co.'s No. 5 Parrish, drilling in shale at 1,320 feet; The Texas Co.'s No. 1 Jackson, drilling at 540 feet; Underwood Drilling Co.'s No. 1 Wilson has oil showing at 1,560 feet; Verschoyle and others' No. 9-B Wilson, drilling at 1,085 feet; Wolfe and others' No. 1 Chilson, drilling at 1,700 feet; Daniels and others' No. 1 Stamfil, drilling at 1,060 feet; Foster and others' No. 1 Andrews, drilling at 920 feet; Goldsmith and others' No. 7 Davis, drilling at 850 feet; Gwynne and others' No. 1-B Rogers, drilling at 1,025 feet; Howland and others' No. 1 Andrews, drilling at 960 feet; Humble Oil & Refining Co.'s No. 3 Wood, drilling at 1,130 feet; Lowery and others' No. 6 Harbison, drilling at 400 feet; Maer and others' No. 1 Graham, fishing at 930 feet; same company's No. 1 Monohan, drilling at 500 feet; Midway Development Co.'s No. 1 Morrison, drilling at 1,340 feet; Murchison and others' No. 12 Griffin, drilling at 960 feet; same company's No. 13 Griffin, drilling at 1,120 feet; same company's No. 14 Griffin, drilling at 350 feet; same company's No. 6-C Harmel, drilling at 1,240 feet; same company's No. 1 Lauster, drilling at 1,060 feet; same company's No. 5 Wood, drilling at 1,295 feet; same company's No. 7 Wood, drilling at 300 feet; Muse and others' No. 1 Brazina, drilling at 1,320 feet; Norton and others' No. 1 Wilhelm, drilling at 930 feet; Petroleum Production Co.'s No. 5 Bridwell, drilling at 850 feet; same company's No. 4 Hausler, drilling at 1,060 feet; same company's No. 6 Hausler, drilling at 800 feet; Roxana Petroleum Corp.'s No. 2 Kunkel, drilling at 900 feet; same company's No. 3 Kunkel, fishing at 1,110 feet; Shamrock Oil Co.'s No. 20 Goldsmith, spudding; same company's No. 6-B Richardson, drilling at 500 feet; Shaw and others' No. 4 Hausler, drilling at 300 feet; Southern Exploration Oil Co.'s No. 1 Kinder, drilling at 1,250 feet; Sun Oil Co.'s No. 5 Green is on and at 1,075 feet; same company's No. 1 Kunkel, drilling at 800 feet; Texhoma Oil & Refining Co.'s No. 2 Jeske, drilling at 840 feet; Wollett and others' No. 3 Griffin, drilling at 1,140 feet; same company's No. 4 Griffin, drilling at 30 feet; Atlantic Oil Production Co.'s No. 1 Blewett, drilling at 1,220 feet; Bridwell and others' No. 1 Giddings, drilling at 1,675 feet; Eureka Drilling Co.'s No. 1 Parkey, underreaming; Gwynn and others' No. 1 Postusek, drilling at 60 feet; Magnolia Petroleum Co.'s No. 1 Lauster, drilling at 450 feet; Maxwell and others' No. 1 Harolson, reaming; Roxana Petroleum Co.'s No. 1 Blewett, drilling at 1,435 feet; Sun Oil Co.'s No. 7 Farmer, drilling at 1,120 feet.

Young County Drilling

Burns and others' No. 1 Tucker, drilling at 1,210 feet; Burton and others' No. 1 Eichelberger, drilling sand at 945 feet; Camp Oil & Gas Co.'s No. 1-A Campbell, spudding; Carey Drilling Co.'s No. 1 Roach, drilling at 1,325 feet; Dunn and others' No. 1 Craig, drilling at 1,540 feet; Gwynne and others' No. 1 Gambrell, drilling at 640 feet; Harvey and others' No. 1 Wilson, drilling at 450 feet; Hinson and others' No. 1 Ribble, drilling at 775 feet; Johnston and others' No. 1 Daws, spudding; Knight and others' No. 1 Brooks, drilling at 480 feet; Krog and others' No. 1 Boone, drilling at 350 feet; Maer and others' No. 1 Hamilton, drilling at 1,175 feet; McGee and others' No. 1 Boyd, drilling at 915 feet; Miller and others' No. 1 Hume, has oil show at 4,265 feet; Mooers and others' No. 1 Ickert, drilling at 800 feet; Murchison and others' No. 3 Gambrell, drilling at 500 feet; same company's No. 4 Gambrell, drilling at 600 feet; Nine Hundred Oil Co.'s No. 5 Benson, drilling at 850 feet; Oneall and others' No. 1 Bullock, drilling at 1,025 feet; Pure Drilling Co.'s No. 1 Bernhardt, will shoot at 995 feet; Pois and others' No. 1 Dietrich, drilling at 1,410 feet; Reed and others' No. 1 Clark, coring a sand at 860 feet; Reed and others' No. 1 Foster, drilling at 675 feet; Simms Oil Co.'s No. 3 Carpenter, drilling at 810 feet; Suggett and others' No. 1 Hawkins, drilling at 960 feet; The Texas Co.'s No. 1 Gambrell, drilling at 890 feet; same company's No. 1 Graham, drilling at 250 feet; Texhoma Oil & Refining Co.'s No. 1 Belknap Coal Co., drilling at 860 feet; White and others' No. 1 Stewart, drilling at 860 feet; Wilson and others' No. 1 Campbell, drilling at 800 feet.

Stephens County Drilling

Critten and others' No. 8 Cobb, fishing at 3,320 feet; Interstate Consolidated Oil Co.'s No. 1 Lane, drilling at 1,400 feet; Mid-Kansas Oil & Gas Co.'s No. 15 Hill, drilling at 1,610 feet; same company's No. 11 Tullos, drilling out a plug at 3,720 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, drilling at 3,263 feet; Republic Production Co.'s No. 2 Knox, drilling by tools at 3,560 feet; Snowden & McSweeney's No. 5 Higginbotham, fishing at 3,175 feet; Texas Consolidated Oil Co.'s No. 6 Martin, drilling at 2,580 feet; Adamson and others' No. 2 Bradford, fishing at 1,675 feet; Hart Oil Corp.'s No. 6 Hart, drilling at 3,740 feet; Hughes and others' No. 4 Gandy, drilling at 430 feet; Knox and others No. 1 Flournoy, fishing at 3,840 feet; Landreth Production Co.'s No. 1 Wark, drilling at 2,500 feet; Lewis Oil Co.'s No. 1 Brown, putting on pump; Magnolia Petroleum Co.'s No. 7 Brown, drilling by tools at 3,220 feet; same company's No. 8 Brown, drilling up bailer at 3,175 feet; same company's No. 5 McCauley, drilling at 3,860 feet; Pearson and others' No. 3 Williams, drilling at 1,500 feet; Scott and others' No. 1 Curry, drilling at 2,115 feet; Simms Oil Co.'s No. 6-A Jackson, drilling at 2,530 feet; Sun Oil Co.'s No. 6 Stoker, drilling at 3,415 feet; Texas Pacific Coal & Oil Co.'s No. 2 Gardenshire, drilling at 860 feet; same company's No. 2 Hand account 2, drilling at 1,010 feet; same company's No. 1 Veale, fishing at 3,77

(Continued on Page 234)

News of Mexican Fields

By George Blardone

TAMPICO, Mexico, Jan. 23.—Some 64 wells were completed in Mexican fields during the month of December, of which 21 finished as producers and the remainder were failures. Of the wells finishing in the pay the northern fields contributed 17 and the south fields 4. New production resulting from the month's completions rated as potential flush was; Northern fields, 91,105 bbls.; south fields, 1,850 bbls; total, 92,955 bbls.

Mexican Petroleum Co., at Ebano, scored the best of two pay completions finished last week. It's No. 44 La Dicha drilled in at 1,895 feet, a shallow well, rated 5,000 bbls. Over by the Corcovado boundary, its No. 1 San Pedro is a duster at 2,455 feet. The other pay completion was Mexican Gulf Oil Co.'s No. 25 El Barco, which is good for 200 bbls. at 1,485 feet, the shallowest pay completion ever finished in this El Barco sector, where previous experience dictates to take the upper pay stratum production, which was done in this instance.

The failures during the week follow: La Corona Petroleum Co.'s No. 150, Lot 1 Cacalilao, a dry hole at 2,250 feet. International Petroleum Co.'s No. 34, Lot 5, dry at 2,405 feet; and its No. 136, same lot, was a worthless fluid well at 1,850 feet. Williamson and others, No. 1-B La Canoa, will be abandoned at 2,300 feet. It had a little showing of light gravity stuff. In Corcovado, Power and others' No. 3 Garruche, is a duster at 2,370 feet.

In the south fields, Huasteca Petroleum Co.'s No. 51 Cerro Azul finished a fluid well at a sub-sea level of 1,536 feet.

Northern Fields

In the Cacalilao sector of the northern fields drilling operations as the week ended are as follows: La Corona Petroleum Co., in Lot 4; its No. 147 is in lime with a showing at 1,960 feet; No. 149 is in the same formation at 2,410 feet; No. 161 looks dubious as it is bailing down salt water at 1,925 feet; No. 162 cemented 8-inch in the San Felipe at 1,180 feet; No. 163 is drilling in shale at 210 feet; No. 164 cemented 8-inch in the San Felipe at 1,190 feet. International Petroleum Co.'s operations in Lot 5: No. 33 is in the San Felipe at 1,845 feet; No. 104 is in gray lime at 1,970 feet; No. 124 is in a similar formation at 1,762 feet; No. 127 is in the San Felipe at 1,420 feet; No. 129 is fishing at 1,660 feet; No. 130 is in lime at 2,470 feet; No. 134 is in the San Felipe at 1,820 feet; No. 137 is running 8-inch in the San Felipe at 1,206 feet; No. 142 is in gray lime with a showing

(Continued on Page 236)

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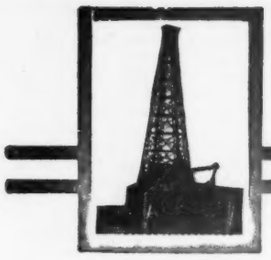


North-Central Texas Field

By Staff Correspondent

Production declines 2,210 bbls. Completions were nearly a third more, Archer County again leading with 31 and Wichita having 15. South Archer and North Young Counties have number of wells nearing completion. Texon Oil & Land Co. drills Reagan County well mile deep. South Archer purchase by Texas.

FORT WORTH, Tex., Jan. 26.—The announcement by the Prairie Oil & Gas Co. of an advance in the price of crude oil was the best news that has come to the North Texas oil man in many, many months. Within a few hours time the new posting was followed by the Gulf Pipe Line Co., the Humble, The Texas Co., Magnolia, Sinclair Crude Oil Purchasing Co. and the United Producers Pipe Line Co. The new posting returns the purchasing schedules of practically all the companies to the old plan of five grades, the grade of 39 gravity and above having been restored in the original announcement by the Prairie. The schedule now stands as follows: Below 30 gravity $1.00, 30 to 32.9 gravity $1.15, 33 to 35.9 gravity $1.35, 36 to 38.9 gravity $1.50 and 39 gravity and above $1.60. All the companies are now adhering to this schedule with the exception of the Humble Pipe Line Co., which recognizes only four grades in the Moran Field of Shackelford County. In this field the Humble pays $1.50 for everything above 36 gravity. In other sections of the territory the Humble has a schedule of five grades.

The advance in crude prices was not altogether unexpected by North Texas operators, especially since the Wortham Field in Central Texas did not develop so rapidly as an overproduction menace as had been expected. Then, too, the premiums that some of the independent small refineries have been paying for some time led to the opinion that the price schedule could not be maintained very long.

Purchase by The Texas Co.

The purchase by the Texas Co. of an extensive producing property in the south Archer County district is one of the largest deals of the kind made in the North Texas territory for many months. The property was purchased from the Knight & Hines-Panhandle-Consolidated Oil Co. interests and is in what is known as the Knight-Hines and the Ragle Pools of south Archer. The consideration was $1,000,000 in cash and other considerations which will, it is said, run to a minimum of $500,000 and probably a maximum of $750,000.

The property purchased is recognized as one of the most valuable anywhere in the Archer County fields. It consists of 865 acres of leases, together with 31 producing wells making approximately 2,400 bbls. daily. The leases are out of the Bearden, C. L. Davis and the Ragle lands. The Panhandle Refining Co. held a half interest in the properties and the other half interest was held by Knight & Hines are individual operators and the Consolidated Oil Co. which is composed of Knight and Hines and W. C. Allen.

Production Declines

Production in North Central Texas registered a decline of 2,210 bbls. during the week. The total is 129,105 bbls. compared with a total last week of 131,315 bbls. The principal losses were in the Burkburnett Pool and the Iowa Park territory, including Archer County. Burkburnett lost 1,775 bbls., Iowa Park registered a decline of 2,875 bbls. and Eastland County lost 5 bbls. Electra, Stephens County and the wildcat districts all showed gains. Electra gained 135 bbls., Stephens County gained 290 bbls. and the gain in the wildcat districts totaled 2,020 bbls.

Completions this week were nearly a third more than during the previous week. Total completions were 69, compared with 48 for the week before. There were 40 producing oil wells, 26 dry holes and 3 gas wells. Out of the 48 completions last week 29 were oil wells, 18 were dry holes and 1 was a gas well.

New production this week is only 5,305 bbls. from 40 producers while last week the total new production was 7,630 bbls. from 29 producers. However, last week's completions included two wells that had initial production of more than 2,000 bbls. each. The average per well for the 40 new oil wells this week is a little more than 132 bbls., which is a rather high average. This week's completions also include 3 gas wells with a total of 22,000,000 feet of gas daily. The largest gas well is the Texhoma Oil & Refining Co.'s Maddox No. 1 in Montague County which is reported making 21,000,000 feet of gas daily.

Half in Archer County

This week Archer County had 31 completions, again nearly half the total for the entire territory. In the county there where 21 oil producers and 10 dry holes. New production in Archer was 3,410 bbls., an average per new well of more than 152 bbls. Wichita County recorded 15 completions, 8 oil wells and 7 dry holes. New production in the county amounted to 450 bbls. Young County had six completions, two oil producers making 425 bbls. and four dry holes. Stephens County recorded only four completions, one an oil well making 40 bbls., two dry holes and one gas well making 500,000 feet of gas daily. Eastland County reported only three completions, two of which were oil wells with a total new output of 175 bbls. The other completion was a dry hole. The wildcat districts had 10 completions this week compared with 12 for the previous week. This week there are six oil producers, two dry holes and two gas wells. New production amounts to 805 bbls. and there is also 21,500,000 feet of gas daily from the wildcat fields.

The south Archer and north Young County area has its usual number of wells nearing completion. The Shamrock Oil Co.'s No. 5-C Richardson in south Archer is estimated to be making 100 bbls. from the sand at 1,300 feet and the Swastika Oil Co.'s No. 3 Neal, also an Archer County operation, is estimated to be good for 100 bbls. at 1,090 feet, although not completed. Wollett and others have a producer in their No. 2 Griffin, estimated to be making 150 bbls. from sand at 1,310 feet, while being completed.

North Young Producers

In north Young County, which is closely connected with the producing areas of south Archer the Camp Oil & Gas Co. has what appears to be a small producer in its No. 1 Campbell. The hole has been giving some trouble but is estimated to be making 30 bbls. daily from sand at 965 feet. Murchison and others, also in Young, have a prospect for a producer in their No. 1 Schlegel. The well is now reported to be making about 50 bbls. of oil and approximately the same amount of water from the sand at 1,215 feet. The Simms Oil Co.'s No. 2 Carpenter is estimated to be good for 100 bbls. a day from the 1,035-foot pay level.

In Hutchinson County there are two operations showing for extensive gas production, while drilling is proceeding in an effort to reach the oil producing le... These are Barnum and others' No. ... Johnson, which is reported making ... 000,000 feet of gas at 2,840 feet, ... the Dixon Creek Oil Co.'s No. 1 ... which is making about 50,000,000 ... of gas daily from 2,885 feet.

In Carson County, also Texas Pan... dle district, the American Refining Co.'... No. 2 Burnett has reached the pay ... and is producing from the customary ... mation for that district, the granite wa... The well, while not completed, is est... mated to be making about 200 bbls. daily from a depth of 2,978 feet.

In Reagan County, southwest Texa... the Texon Oil & Land Co. has drilled ... No. 1 Group 2 well on University ... to the depth of about an even mile. ... cording to the latest drilling reports ... drill had reached 5,260 feet. This is ... far the deepest hole ever drilled in ... section of the State.

The Petroleum Producers Co. of Wich... ita Falls during the past week is re... norted to have purchased from Harve... Gardner and associates a lease of ... acres out of the Kunkel farm for a ... sideration of $20,000 or more than $1,0... per acre. The lease is not on a produc... ing basis. It is located in the Ca... Pool, south Archer County.

PRODUCTION REPORT
Week Ending January 23, 1926

Burkburnett	
Barkley & Meadows	625
Humble Oil & Refining Co.	480
Gulf Production Co.	690
Magnolia Petroleum Co.	2,910
McMan Oil Co.	285
Panhandle Refining Co.	305
Prairie Oil & Gas Co.	15
Sinclair Oil & Gas Co.	70
The Texas Co.	515
Texhoma Oil & Refining Co.	495
Miscellaneous	7,215
Total	13,545
Electra	
Empire Gas & Fuel Co.	1,965
Humble Oil & Refining Co.	130
Griswold Oil Co.	345
Gulf Production Co.	915
Magnolia Petroleum Co.	4,125
McMan Oil Co.	180
Panhandle Refining Co.	60
The Texas Co.	3,395
Texhoma Oil & Refining Co.	195
Miscellaneous	5,650
Total	16,960
Iowa Park, Etc.	
Griswold Oil Co.	70
Gulf Production Co.	90
Humble Oil & Refining Co.	10
Magnolia Petroleum Co.	440
Panhandle Refining Co.	65
Texhoma Oil & Refining Co.	35
Miscellaneous	3,135
Archer County	
Empire Gas & Fuel Co.	625
Griswold Oil Co.	105
Gulf Production Co.	2,410
Humble Oil & Refining Co.	375
Magnolia Petroleum Co.	720
Panhandle Oil & Refining Co.	2,850
Prairie Oil & Gas Co.	1,315
The Texas Co.	600
Texhoma Oil & Refining Co.	2,500
Miscellaneous	24,925
Petrolia	
Gulf Production Co.	40
Magnolia Petroleum Co.	20
The Texas Co.	85
Miscellaneous	265
Total	10,000
Stephens County	
Empire Gas & Fuel Co.	45
Gulf Production Co.	1,330
Humble Oil & Refining Co.	225
Magnolia Petroleum Co.	630
Mid-Kansas Oil & Gas Co.	1,035
Prairie Oil & Gas Co.	960
Sinclair Oil & Gas Co.	225
The Sun Oil Co.	225
The Texas Co.	3,730
Texas Pacific Coal & Oil Co.	870
Miscellaneous	7,250
Total	15,500
Eastland County	
Gulf Production Co.	900
Humble Oil & Refining Co.	70
Magnolia Petroleum Co.	700
Mid-Kansas Oil & Gas Co.	180
Panhandle Refining Co.	225
Prairie Oil & Gas Co.	630
Sinclair Oil & Gas Co.	180
The Texas Co.	300
Texas Pacific Coal & Oil Co.	940
Miscellaneous	2,995
Total	6,120
Other Fields	
Strawn—	
Texas & Pacific Coal & Oil Co.	215
Miscellaneous	465
Moran—	
Empire Gas & Fuel Co.	85
Humble Oil & Refining Co.	310
The Texas Co.	125
Texhoma Oil & Refining Co.	140
Miscellaneous	1,040
Coleman County—	
Miscellaneous	70
Brown County—	
Miscellaneous	915
Comanche-Eastland—	
Humble Oil & Refining Co.	300
Magnolia Petroleum Co.	1,235
Mid-Kansas Oil & Gas Co.	395
Sinclair Oil & Gas Co.	40
The Texas Co.	375
Texas Pacific Coal & Oil Co.	140
Miscellaneous	2,000
Young County—	
Gulf Production Co.	85
Sinclair Oil & Gas Co.	400

News from Fields of Canada

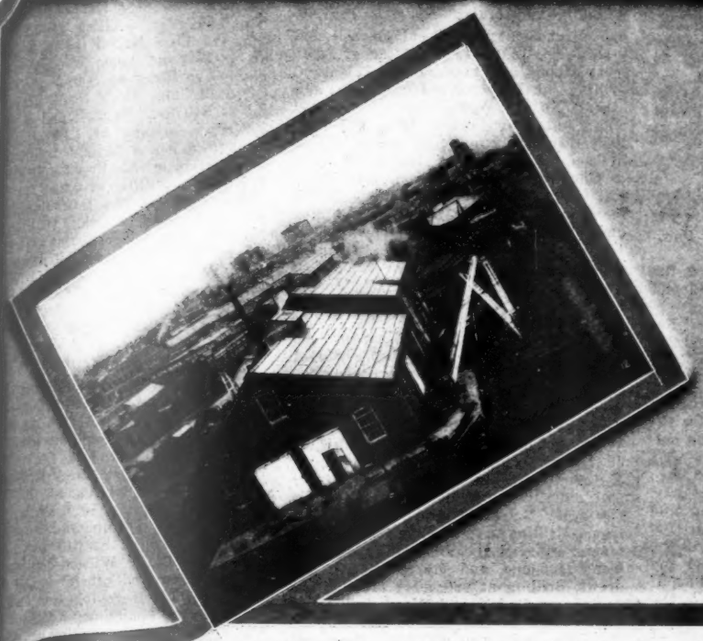
By Victor Lauriston

CHATHAM, Ont., Jan. 24.—In the Canadian West, extensive drilling operations are to be carried on this spring and summer by the Royal Canadian Oil Co., which holds considerable acreage in northern Montana and southern Alberta. It is understood the 1925 program includes the spudding in of five tests on acreage recently acquired from the Gordon Campbell interests; in addition to further drilling in southern Alberta, where the Sanctuary Oil Co., a subsidiary of the Royal Canadian, has an unfinished test in the Pakowki Lake area. Mr. Campbell will have charge of the entire operations on both the Montana and Alberta sides of the international boundary, and actual drilling will be undertaken as soon as the weather permits.

In east central Alberta, practically all the drilling outfits in the Irma-Wainwright are still shut down. The first tank car of crude from the Irma-Wainwright Field was shipped last week from Wainwright, being part of the production of British Petroleum No. 4 flowing well. The oil will be used, unrefined, for fuel purposes by the Canadian National railroads, in the oil-burning locomotives used on the Pacific section.

In the Ontario fields, a new development is reported in the old Tilbury Field, Kent County, near Fletcher, where the Stark & Spence interests of Detroit last year took over the Arthur Neath oil properties, including the Ball farm. This area was first developed about 18 years ago at the time of the discovery of the Tilbury Field, producing from an oil sand around 1,400 feet. Frank Elliott of Wellsville is stated to have drilled the first producers on the Ball farm, the property later passing from him to S. S. Reesman, now of Tulsa, and still later to Stern Brothers. Stark & Spence's No. 1 has just been finished on the Ball farm, about 300 feet east of the old production, and is reported to be making 10 bbls. a day or better from the 1,400-foot sand. Additional tests will be drilled by the new owners of the property.

In Norfolk County, the Dominion Natural Gas Co., which recently completed its No. 2 gasser in the new field between Maybee's Corners and Courtland has moved the outfit from No. 2 to a new location for No. 4 test, which will spud in within a few days. No. 3 is still shut down.



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HINDERLITER TOOL COMPANY

TULSA, OKLAHOMA

Manufacturers of and Specialists in

DRILLING and FISHING TOOLS

Branches Located In Principal Oil Fields

Panhandle Oil & Refining Co..	175
The Texas Co.	40
Miscellaneous	3,635
Mitchell County	1,740
Reagan County	11,090
Jack County	25
Scurry County	45
Carson County	1,195
Hutchinson County	185
Callahan County	1,565
Wilbarger County	5,295
Total	33,875
Total last week	131,315
Total this week	129,105
Loss	2,210

Wichita County Completions

Texhoma Oil & Refining Co.'s No. 1 Jackson, dry at 1,850 feet; Art and others' No. 1 Terhune, 5 bbls. at 480 feet; Granite Oil & Gas Co.'s No. 6 Fisher, dry at 1,025 feet; same company's No. 7 Fisher, 5 bbls. at 850 feet; Hawkins and others' No. 2 Watkins, 100 bbls. at 1,766 feet; Joffee and others' No. 1 Waggoner, dry at 1,700 feet; Kruger and others' No. 10 Allen & Kemp, 110 bbls. at 1,640 feet; Magnolia Petroleum Co.'s No. 40 Rio Bravo, 60 bbls. at 1,780 feet; O'Neil and others' No. 1 Woodward, dry at 2,000 feet; Parker Brothers' No. 1 Hodge, dry at 1,830 feet; Perkins and others' No. 12 Burnett, 85 bbls. at 1,815 feet; Roxana Petroleum Corp.'s No. 1 Denny, 35 bbls. at 680 feet; Magnolia Petroleum Co.'s No. 6 Burnett, 50 bbls. at 1,590 feet; Wichtex Oil Co.'s No. 1 McFall, dry at 1,925 feet.

Archer County Completions

Carter and others' No. 14-E White, dry at 1,665 feet; Norton and others' No. 1 Andrews, dry at 1,530 feet; Riner and others' No. 4-A Wilson, dry at 1,655 feet; Robertson and others' No. 1-B White, 185 bbls. at 1,600 feet; Sheets and others' No. 1 Albright, dry at 1,540 feet; Burns and others' No. 1 Kunkel, dry at 1,515 feet; Clopton and others' No. 1 Harris, dry at 1,600 feet; Consolidated Oil Co.'s No. 1-C Davis, 95 bbls. at 1,075 feet; Gulf Production Co.'s No. 3-A Griffin, 65 bbls. at 1,290 feet; same company's No. 2 Monohan, 140 bbls. at 1,300 feet; same company's No. 3-A Nichols, 35 bbls. at 1,405 feet; same company's No. 4 Oil Investment Co., dry at 1,630 feet; the same company's No. 7 Oil Investment Co., dry at 1,610 feet; Eagle Creek Oil Co.'s No. 1 Cox, dry at 1,130 feet; Fisher and others' No. 2 Rogers, dry at 1,465 feet; Grisham and others' No. 6 Davis, 30 bbls. at 1,075 feet; Gwynn and others' No. 1 Rogers, 100 bbls. at 1,365 feet; same company's No. 5 Rogers, 125 bbls. at 1,275 feet; Humble Oil & Refining Co.'s No. 2 Wood, 10 bbls. at 1,310 feet; Lowery and others' No. 5 Harbison, 155 bbls. at 1,335 feet; Murchison and others' No. 10 Griffin, 115 bbls. at 1,300 feet; same company's No. 11 Griffin, 95 bbls. at 1,295 feet; same company's No. 7-B Harmel, 250 bbls. at 1,285 feet; Petroleum Production Co.'s No. 2 Hausler, 275 bbls. at 1,125 feet; same company's No. 3 Hausler, 300 bbls. at 1,135 feet; same company's No. 5 Hausler, 200 bbls. at 1,130 feet; Ray and others' No. 10 Hausler, 125 bbls. at 1,135 feet; Shamrock Oil Co.'s No. 1-A Goldsmith, 150 bbls. at 1,340 feet; Shaw and others' No. 1 Hausler, 400 bbls. at 1,145 feet; same company's No. 2 Hausler, 600 bbls. at 1,145 feet; Sun Oil Co.'s No. 4 Green, 60 bbls. at 1,085 feet.

Young County Completions

Monroe Production Co.'s No. 1 Cheney, dry at 3,005 feet; Murchison and others' No. 2 Gambrell, 135 bbls. at 1,210 feet; Nine Hundred Oil Co.'s No. 4 Benson, dry at 950 feet; Peters Oil Inc.'s No. 1 Sims, dry at 740 feet; Simms Oil Co.'s No. 1 Carpenter, 290 bbls. at 1,035 feet; Staley and others' No. 1 Thomas, dry at 1,460 feet.

Stephens County Completions

Buckeye Development Co.'s No. 8 Walker, 500,000 feet of gas at 3,205 feet; Corts and others' No. 1 Parks, dry at 4,000 feet; Schimmel and others' No. 1 Watson, dry at 3,435 feet; Texas Pacific Coal & Oil Co.'s No. 44 Binney, 40 bbls. at 1,745 feet.

Eastland County Completions

Dorothy Oil Co.'s No. 1 Elliott, dry at 3,500 feet; Magnolia Petroleum Co.'s No. 7 Harris, 160 bbls. at 1,455 feet; Westheimer and others' No. 8 Hamilton, 15 bbls. at 1,450 feet.

Wildcat Completions

Wilbarger County: Bridwell and others' No. 2 Dill, 145 bbls. at 1,285 feet; Oxford Oil Co.'s No. 1 Waggoner, 50 bbls. at 1,830 feet; Ray and others' No. 5 Bond, 150 bbls. at 1,320 feet; Wells and others' No. 2 Waggoner, 300 bbls. at 2,035 feet; Winnipeg Oil Co.'s No. 4 Bond, 155 bbls. at 2,060 feet.

Baylor County: McGregor and others' No. 1 Wallace, dry at 1,930 feet.

Clay County: Sullivan and others' No. 2 Scott & Ramsdell, 5 bbls. at 1,205 feet; Sommers and others' No. 1 Parker, dry at 1,300 feet.

Montague County: Texhoma Oil & Refining Co.'s No. 1 Maddox, 21,000,000 feet of gas at 795 feet.

Coleman County: Roth and others' No. 9 Overall, 500,000 feet of gas at 1,205 feet.

Wichita County Drilling

Baldwin and others' No. 1 Hefley, cleaning out at 1,070 feet; Magnolia Petroleum Co.'s No. 109 Reilly, setting casing at 1,200 feet; Art and others' No. 2 Terhune, drilling in rock at 420 feet; Hamon and others' No. 1-A McCarty, drilling at 1,230 feet; Hawkins and others' No. 3 Hawkins, drilling at 700 feet; Humble Oil & Refining Co.'s No. 4 Burnett, drilling at 400 feet; Maer and others' No. 1 Allen & Kemp, drilling at 1,505 feet; Magnolia Petroleum Co.'s No. 9 Abernathy, drilling at 710 feet; same company's No. 66 Honaker, drilling at 1,160 feet; same company's No. 10 Maer, drilling in shale at 1,530 feet; same company's No. 8 McMan-Waggoner, drilling at 1,780 feet; same company's No. 4-F Peer Waggoner, underreaming; same company's No. 8-A Waggoner, underreaming; same company's No. 9-A Waggoner, drilling at 840 feet; same company's No. 4-B Waggoner, drilling at 2,075 feet; same company's No. 2 Watkins, cementing casing at 1,755 feet; Moore and others' No. 2 Burnett, drilling at 600 feet; O'Donohoe and others' No. 4 Allen & Kemp, drilling at 1,500 feet; Ross Oil Co.'s No. 1 Waller, resetting casing at 740 feet; Ryan Petroleum Co.'s No. 24-A Nance, fishing at 1,860 feet; Section Two Oil Co.'s No. 5 Barnett, drilling in rock at 580 feet; The Texas Co.'s No. 298 Waggoner, spudding; Texhoma Oil & Refining Co.'s No. 7 Burnett, drilling at 1,585 feet.

Archer County Drilling

Archer Oil Co.'s No. 1 Dowlen, setting casing at 1,664 feet; Carter and others' No. 17-E White, drilling at 1,415 feet; Electra Gulf Oil Co.'s No. 1 Andrews, drilling in lime at 1,415 feet; Franklin and others' No. 2-B Parrish, has oil show at 1,550 feet; Haskell and others' No. 1 Moldrom, drilling at 1,295 feet; Hobbs and others' No. 5 Wilson, drilling at 605 feet; Humphries and others' No. 15 White, drilling at 1,230 feet; Jetter and others' No. 3 White, underreaming; Knox and others' No. 1 Wilson, underreaming; Mid-Kansas Oil & Gas Co.'s No. 1 Wilson, drilling at 1,430 feet; Oil Investment Co.'s No. 4 fee has oil show at 1,195 feet; Phillips and others' No. 5 Wilson, drilling at 1,415 feet; same company's No. 6 Wilson, drilling at 1,395 feet; Prairie Oil & Gas Co.'s No. 30-D Wilson, setting casing at 1,370 feet; Robertson and others' No. 7 White, drilling at 1,530 feet; Simms Oil Co.'s No. 5 Parrish, drilling in shale at 1,320 feet; The Texas Co.'s No. 1 Jackson, drilling at 540 feet; Underwood Drilling Co.'s No. 1 Wilson has oil showing at 1,560 feet; Verschoyle and others' No. 9-B Wilson, drilling at 1,085 feet; Wolfe and others' No. 1 Chilson, drilling at 1,700 feet; Daniels and others' No. 1 Stamfli, drilling at 1,060 feet; Foster and others' No. 1 Andrews, drilling at 920 feet; Goldsmith and others' No. 7 Davis, drilling at 850 feet; Gwynne and others' No. 1-B Rogers, drilling at 1,025 feet; Howland and others' No. 1 Andrews, drilling at 960 feet; Humble Oil & Refining Co.'s No. 3 Wood, drilling at 1,130 feet; Lowery and others' No. 6 Harbison, drilling at 400 feet; Maer and others' No. 1 Graham, fishing at 930 feet; same company's No. 1 Monohan, drilling at 500 feet; Midway Development Co.'s No. 1 Morrison, drilling at 1,340 feet; Murchison and others' No. 12 Griffin, drilling at 960 feet; same company's No. 13 Griffin, drilling at 1,120 feet; same company's No. 14 Griffin, drilling at 350 feet; same company's No. 6-C Harmel, drilling at 1,240 feet; same company's No. 1 Lauster, drilling at 1,060 feet; same company's No. 5 Wood, drilling at 1,295 feet; same company's No. 7 Wood, drilling at 300 feet; Muse and others' No. 1 Brazina, drilling at 1,320 feet; Norton and others' No. 1 Wilhelm, drilling at 930 feet; Petroleum Production Co.'s No. 5 Bridwell, drilling at 850 feet; same company's No. 4 Hausler, drilling at 1,060 feet; same company's No. 6 Hausler, drilling at 800 feet; Roxana Petroleum Corp.'s No. 2 Kunkel, drilling at 900 feet; same company's No. 3 Kunkel, fishing at 1,110 feet; Shamrock Oil Co.'s No. 20 Goldsmith, spudding; same company's No. 6-B Richardson, drilling at 500 feet; Shaw and others' No. 4 Hausler, drilling at 300 feet; Southern Exploration Oil Co.'s No. 1 Kinder, drilling at 1,250 feet; Sun Oil Co.'s No. 5 Green is on sand at 1,075 feet; same company's No. 1 Kunkel, drilling at 800 feet; Texhoma Oil & Refining Co.'s No. 2 Jeske, drilling at 840 feet; Wollett and others' No. 3 Griffin, drilling at 1,140 feet; same company's No. 4 Griffin, drilling at 330 feet; Atlantic Oil Production Co.'s No. 1 Blewett, drilling at 1,220 feet; Bridwell and others' No. 1 Giddings, drilling at 1,675 feet; Eureka Drilling Co.'s No. 1 Parkey, underreaming; Gwynn and others' No. 1 Postusek, drilling at 600 feet; Magnolia Petroleum Co.'s No. 1 Lauster, drilling at 450 feet; Maxwell and others' No. 1 Harolson, reaming; Roxana Petroleum Co.'s No. 1 Blewett, drilling at 1,435 feet; Sun Oil Co.'s No. 7 Farmer, drilling at 1,120 feet.

Young County Drilling

Burns and others' No. 1 Tucker, drilling at 1,210 feet; Burton and others' No. 1 Eichelberger, drilling sand at 945 feet; Camp Oil & Gas Co.'s No. 1-A Campbell, spudding; Carey Drilling Co.'s No. 1 Roach, drilling at 1,325 feet; Dunn and others' No. 1 Craig, drilling at 1,540 feet; Gwynne and others' No. 1 Gambrell, drilling at 640 feet; Harvey and others' No. 1 Wilson, drilling at 450 feet; Hinson and others' No. 1 Ribble, drilling at 775 feet; Johnston and others' No. 1 Daws, spudding; Knight and others' No. 1 Brooks, drilling at 480 feet; Krog and others' No. 1 Boone, drilling at 350 feet; Maer and others' No. 1 Hamilton, drilling at 1,175 feet; McGee and others' No. 1 Boyd, drilling at 915 feet; Miller and others' No. 1 Hume, has oil show at 4,265 feet; Mooers and others' No. 1 Ickert, drilling at 800 feet; Murchison and others' No. 3 Gambrell, drilling at 500 feet; same company's No. 4 Gambrell, drilling at 600 feet; Nine Hundred Oil Co.'s No. 5 Benson, drilling at 850 feet; Oneall and others' No. 1 Bullock, drilling at 1,025 feet; Pace Drilling Co.'s No. 1 Bernhardt, will shoot at 995 feet; Pois and others' No. 1 Dietrich, drilling at 1,410 feet; Reed and others' No. 1 Clark, coring a sand at 860 feet; Reed and others' No. 1 Foster, drilling at 675 feet; Simms Oil Co.'s No. 3 Carpenter, drilling at 810 feet; Suggett and others' No. 1 Hawkins, drilling at 960 feet; The Texas Co.'s No. 1 Gambrell, drilling at 890 feet; same company's No. 1 Graham, drilling at 250 feet; Texhoma Oil & Refining Co.'s No. 1 Belknap Coal Co., drilling at 860 feet; White and others' No. 1 Stewart, drilling at 860 feet; Wilson and others' No. 1 Campbell, drilling at 800 feet.

Stephens County Drilling

Critten and others' No. 8 Cobb, fishing at 3,320 feet; Interstate Consolidated Oil Co.'s No. 1 Lane, drilling at 1,400 feet; Mid-Kansas Oil & Gas Co.'s No. 15 Hill, drilling at 1,610 feet; same company's No. 11 Tullos, drilling out a plug at 3,720 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, drilling at 3,263 feet; Republic Production Co.'s No. 2 Knox, drilling by tools at 3,560 feet; Snowden & McSweeney's No. 5 Higginbotham, fishing at 3,175 feet; Texas Consolidated Oil Co.'s No. 6 Martin, drilling at 2,580 feet; Adamson and others' No. 2 Bradford, fishing at 1,675 feet; Hart Oil Corp.'s No. 6 Hart, drilling at 3,740 feet; Hughes and others' No. 4 Gandy, drilling at 430 feet; Knox and others No. 1 Flournoy, fishing at 3,840 feet; Landreth Production Co.'s No. 1 Wark, drilling at 2,500 feet; Lewis Oil Co.'s No. 1 Brown, putting on pump; Magnolia Petroleum Co.'s No. 7 Brown, drilling by tools at 3,220 feet; same company's No. 8 Brown, drilling up bailer at 3,175 feet; same company's No. 5 McCauley, drilling at 3,860 feet; Pearson and others' No. 3 Williams, drilling at 1,500 feet; Scott and others' No. 1 Curry, drilling at 2,115 feet; Simms Oil Co.'s No. 6-A Jackson, drilling at 2,520 feet; Sun Oil Co.'s No. 6 Stoker, drilling at 3,415 feet; Texas Pacific Coal & Oil Co.'s No. 2 Gardenshire, drilling at 860 feet; same company's No. 2 Hand, account 2, drilling at 1,010 feet; same company's No. 1 Veale, fishing at 3,775

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News of Mexican Fields

By George Blardone

TAMPICO, Mexico, Jan. 23.—Some 64 wells were completed in Mexican fields during the month of December, of which 21 finished as producers and the remainder were failures. Of the wells finishing in the pay the northern fields contributed 17 and the south fields 4. New production resulting from the month's completions rated as potential flush was: Northern fields, 91,105 bbls.; south fields, 1,850 bbls; total, 92,955 bbls.

Mexican Petroleum Co., at Ebano, scored the best of two pay completions finished last week. It's No. 44 La Dicha drilled in at 1,895 feet, a shallow well, rated 5,000 bbls. Over by the Corcovado boundary, its No. 1 San Pedro is a duster at 2,455 feet. The other pay completion was Mexican Gulf Oil Co.'s No. 25 El Barco, which is good for 200 bbls. at 1,485 feet, the shallowest pay completion ever finished in this El Barco sector, where previous experience dictates to take the upper pay stratum production, which was done in this instance.

The failures during the week follow: La Corona Petroleum Co.'s No. 150, Lot 1 Cacalilao, a dry hole at 2,250 feet. International Petroleum Co.'s No. 34, Lot 5, dry at 2,405 feet; and its No. 136, same lot, was a worthless fluid well at 1,850 feet. Williamson and others, No. 1-B La Canoa, will be abandoned at 2,300 feet. It had a little showing of light gravity stuff. In Corcovado, Power and others' No. 3 Garruche, is a duster at 2,370 feet.

In the south fields, Huasteca Petroleum Co.'s No. 51 Cerro Azul finished a fluid well at a sub-sea level of 1,536 feet.

Northern Fields

In the Cacalilao sector of the northern fields drilling operations as the week ended are as follows: La Corona Petroleum Co., in Lot 4; its No. 147 is in lime with a showing at 1,960 feet; No. 149 is in the same formation at 2,410 feet; No. 161 looks dubious as it is bailing down salt water at 1,925 feet; No. 162 cemented 8-inch in the San Felipe at 1,180 feet; No. 163 is drilling in shale at 210 feet; No. 164 cemented 8-inch in the San Felipe at 1,190 feet. International Petroleum Co.'s operations in Lot 5: No. 33 is in the San Felipe at 1,845 feet; No. 104 is in gray lime at 1,970 feet; No. 124 is in a similar formation at 1,762 feet; No. 127 is in the San Felipe at 1,420 feet; No. 129 is fishing at 1,660 feet; No. 130 is in lime at 2,470 feet; No. 134 is in the San Felipe at 1,820 feet; No. 137 is running 8-inch in the San Felipe at 1,206 feet; No. 142 is in gray lime with a showing

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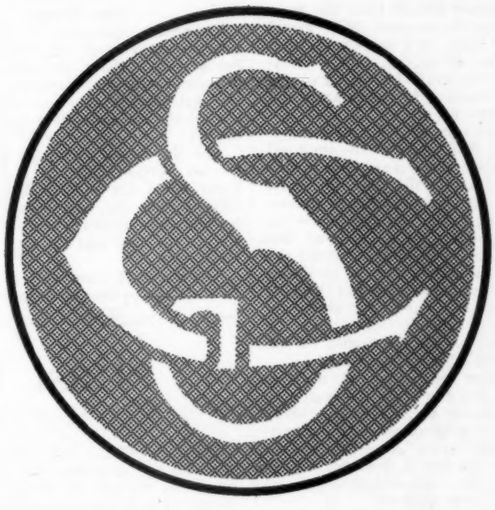
Natural Gasoline



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Rocky Mountain Area

By Frank B. Taylor

Higher crude prices are expected to stimulate drilling activity. Shale oil deposits of southern Wyoming to be tested with new retort which is claimed will permit commercial production. New Mexico seems due for considerable exploration work in the near future. Eddy County looks good.

CASPER, Wyo., Jan. 24.—The rise of 25 cents in crude prices for the Rocky Mountain region is expected to help considerably in increasing activity in the fields and wildcat districts here. Practically all the fields were included in this advance in price except Sunburst in Montana, which advanced 15 cents only.

Mule Creek was not included in the advance because that field is shut down at present and is not producing any oil. The black oil fields at Lander were not included because practically all of the black oil fields are producing under contract and are not affected by market prices. Lost Soldier oil is also all contracted for in advance and this field does not come under the open market quotations, but the contract prices for Lost Soldier crude are such that they equal the market quotations.

The crude output from the Moffat Field, the Fort Collins Field and Florence, in Colorado, is contracted before it is taken from the wells and the Hogback Field in New Mexico is owned by the Midwest Refining Co. entirely so that no quotations appear for these operations.

Lavoye Again in Court

The town of Lavoye in the heart of the Salt Creek Field is again up before the Federal Court, this time on a contempt charge against the principal occupants of the buildings2 in the town. Last April, Louis Lavoye who was the original claimant for the surface, and others, were enjoined by the court from occupying the premises. The court order was not obeyed and the occupants continued to hold their places. The court has set February 11 for the defendants to come to trial.

The townsite of Lavoye was filed upon by Louis Lavoye in the usual manner, as a homestead, after the Ohio Oil Co. had secured the lease for operating on that area. The Ohio wanted to drill wells on the townsite, but was kept from doing so by the buildings. The matter was taken to the Secretary of the Interior and the Lavoye homestead claim was revoked and a court order issued to the town residents to vacate the place. There are about 250 persons in Lavoye and it is famed as a typical, wide-open oil camp town, rivalling the old gold camps of the early days.

The Wyoming State Supreme Court reversed and remanded the decision of the lower court in the case of the United States Oil & Refining Co. versus the Glenn Oil Co. The United States Oil & Refining Co. operates a refinery at Osage, Weston County. The Glenn Oil Co. has some wells and production in that field and it is said an oral contract was made between the two firms to the effect that the United States Oil & Refining Co. would furnish the Glenn firm with gasoline, fuel oil and other equipment and material for the operation of its leases and in return for this, the Glenn Oil Co. was to deliver its entire production to the United States Oil & Refining Co. The United States firm was unable to handle all the crude produced and the Glenn was obliged to tank some of the oil and later sell it at a low price. The Glenn Oil Co. asked for the difference lost through the drop in the price of oil and the court awarded the claim.

The shale oil deposits of southwestern Wyoming are to be given another tryout with a new type of retort. A carload of shale was shipped from Rock Springs to Los Angeles, Cal., where the new retort is located and the claim is being made that in the smaller tests made with the new type of retort, the product would be able to compete commercially with oil production from wells. There is no question of the vast amount of petroleum in the great oil shale beds of this region, but so far, no method has been devised that would extract the oil from the shale in an economical manner that would place it on a par with petroleum from the wells. The oil in the shale is scattered through the strata in small globules and does not lie in solid bodies as in the oil sands of the fields.

A recent decision of the Interior Department may void many of the shale oil holdings in this region. According to this decision, a claimant to the oil shale rights under an area must have proven that the area really contains shale oil beds. The presence of a shale oil bed on an adjoining claim does not fulfill the needs of the claim, but it must be shown by the claimant that such oil bearing strata actually exist upon the claim applied for, even though the strata lie horizontal and is to be found on exposures on both sides of the claim.

This decision is considered a wide reaching one for the shale oil region in southern Wyoming and Colorado. Many claimants have filed upon lands designated as probable shale oil lands by the United States Geological Survey and then set back to await the time when shale oil lands would be in demand.

The Sheldon Dome well of the Mack Oil Co., drilling about 50 miles north of Riverton, near the Maverick Springs Field in Fremont County, is shut down at 2,500 feet waiting better weather conditions. The Hatfield Oil Co.'s No. 2 well on the Eight Mile Lake Dome in Carbon County, south of Rawlins is drilling at 2,450 feet and expects to have the Wall Creek sand next week. The No. 1 well of this firm is supplying gas to the Parco refinery and the present drilling well is considered to be located down on the structure so that it will find oil if there is any in the sands.

Byron Field Well Shut Down

The California Co.'s well in the Bryon Field that was thought to be a new strike some weeks ago is shut down on account of a frozen gas line. The depth is now 2,882 feet, the well having been drilled about 400 feet below where the showing of oil and gas was struck. This well is located on Section 31-56-96.

The Union Oil Co. completed a well in the Maverick Springs Field in Fremont County, Section 15-6-2, to the Embar sand at 1,714 feet that found black oil production in that sand but was not tested as there was no available tankage at the well and no pipe line in that field. It is estimated at 250 bbls.

The deep test of the Gose Oil Syndicate on Section 28-47-65 is drilling at 4,280 feet. This well is a deep test in Weston County, on the east side of Wyoming and expects to find either the Muddy or Dakota sands productive at about 5,000 feet.

The Utah Oil & Refining Co.'s well on the Black Mountain structure in Hot Springs County, Section 35-43-91, is drilling at 2,290 feet. This is the second well on that structure, the first being a producer of black oil at about 3,500 feet.

The Carter Oil Co., drilling on the Billy Creek structure in Johnson County on leases of the Consolidated Royalty, is stopping the hole at 4,782 feet on Section 21-48-82 and will back up the hole to 3,180 feet, where a heavy gas pressure was mudded off in this well. The casing will be perforated at this point. The gas flow was estimated at 70,000,000 feet.

New Mexico

This State appears to be coming in to a large campaign of exploration the coming season. About 20 wells are active or temporarily shut down at present and the Artesia operation in Eddy County has all the earmarks of a new field being opened.

The No. 2 well of the Twin Lakes Oil Co. on Section 28-18-28 in the Artesia Field found the sand at 2,000 feet and after a shot the well is estimated good for 300 bbls., although there was no tankage at the well and no way to test the production.

The Oscar Howard well on Section 22-18-27 is in the lime at 2,930 feet and has found nothing yet, while about 5 miles north of the Twin Lakes wells, the New State Oil Co. on Section 4-18-28 found the pay at 2,297 feet and is shut down waiting for a string of 5½-inch casing before drilling in. About 1,400 feet of oil is standing in this well.

The Welch Syndicate well is shut down at 1,200 feet on Section 29-17-27 and the Burgess & Goodell well on Section 30-18-29 is drilling at 1,200 feet. The Rotary Oil Co.'s well on Section 30-18-28 is drilling at 1,600 feet and the Holman & Ferson well on Section 29-18-28 is a good producer at 2,037 feet, estimated at 350 bbls., but no storage for a test. The Illinois Producers Co. has two wells on Section 32-18-28, one shut down at 1,280 feet and the other fishing at 1,980 feet. The Walker Mitchell well on Section 28-18-28 is likewise fishing at 1,320 feet.

Several other tests are drilling at shallow depths and some of these with light machines that are not expected to be able to reach the sands.

The Union of California's well on the Vermejo Dome in Colfax County is not looking very good. It is located on Section 23-31-18 and the hole is at 3,291 feet. The drill has passed through two granite sills.

Hall and others, drilling on the Aztec Dome, in San Juan County, on Section 25-30-12, have reached a depth of 1,000 feet and found salt water at that level.

The Marland Oil Co., drilling on Section 20-1-93 in Rio Blanco County, Colorado, found a heavy flow of hot water at 1,960 feet and the Thornburg Dome well of the same firm, located on Section 16-3-91, is shut down at 1,726 feet.

The new electric plant of the Midwest is expected to be handling all the Midwest pumpers by the middle of February as the transmission lines are about completed and the motors set at most of the wells now. Some few areas are still waiting to be connected, but the plant has already demonstrated it will handle the load better than expected. This plant is intended for the Midwest

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East Central Texas

By a Staff Correspondent.

MEXIA, Tex., Jan. 24.—With 111 oil wells in, the production of the Wortham Field for the 24 hours ending at 7 o'clock this, Saturday, morning was 122,892 bbls. The record for the previous 24 hours was 122,083 bbls., but from eight fewer wells. Thus eight wells were able to increase the production of the field only 809 bbls. and the initial production of the eight wells was about 6,000 bbls., which makes it appear that the 103 wells already in fell off over 5,000 bbls. within 24 hours time.

There is no doubt in the mind of any one that the Wortham Field has seen its best days. When it made 168,462 bbls. the 24 hours ending with the morning of January 14 it shot its bolt. It has been declining almost daily. There were only 68 wells in the field when it reached its peak and the consistent decline of the wells may be seen by the fact that with the addition of 43 wells the production of the field declined 45,570 bbls. a day.

The Humble Oil & Refining Co.'s No. 3 Dodd, which came in as a 400-bbl. well minimizes the importance of the northeast extension of the pool. This area was thought in the early days of Wortham to be the best part of the field. The Dodd property is at the gateway of a block of acreage of the Humble Oil & Refining Co. and when the first wells came in on the property making about twelve to fifteen hundred bbls. a day just beyond a row of 8,000-bbl.wells, the northeast end of the field began to look bad. The 400-bbl. completion of this week makes it look even more dubious. The extreme southern end of the field has not yet been defined but the Limestone County side of Wortham will not produce the volume of oil that the area in Freestone County will.

Premiums are being offered for crude in the field but the purchasing agents for the smaller companies find it hard to get oil as there is not enough of it in sight to satisfy the wants of the big buyers with pipe line facilities.

Since the close of last week's review last Tuesday, and up to this morning 29 wells were completed of which five were abandoned, four as dry and the fifth having been given up as a hopeless job because of other dry holes between it and production. The completions were as follows:

29 Completions—4 Dry

Simms Oil Co.'s No. 3 Manning, sand 3,019-30 feet, 200 bbls.

Simms Oil Co.'s No. 6 Manning, sand 3,026-35 feet, 300 bbls.

Simms Oil Co. and Marland Oil Co.'s No. 3 Calome, sand at 2,970-3,010 feet, 1,100 bbls.

Magnolia Petroleum Co.'s No. 10 Boyd, sand at 2,970-3,020 feet, 1,000 bbls.

Magnolia Petroleum Co.'s No. 12 Boyd, sand 2,970-3,025 feet, 900 bbls.

Boyd Oil Co.'s No. 1-A Wilson, sand 2,974-3,012 feet, 2,000 bbls.

Sun Oil Co.'s No. 2 Simmons, sand 2,972-99 feet, 200 bbls.

Oxford Oil Co.'s No. 1 Phillips-Young, sand 2,985-3,003 feet, 600 bbls.

Kirby Petroleum Co.'s No. 1 Watson, sand 2,983-92 feet, 1,600 bbls.

Magnolia Petroleum Co.'s No. 7 Boyd, sand 3,005-22 feet, 500 bbls.

Simms Oil Co. and Marland Oil Co.'s No. 2 Rogers, sand 2,978-3,010 feet, 4,000 bbls.

Walsh and others' No. 1 Patterson, sand 2,979-2,996 feet, 1,000 bbls.

Magnolia Petroleum Co.'s No. 11 Boyd, sand at 3,008-22 feet, 1,000 bbls.

Humble Oil & Refining Co.'s No. 3 Dodd, sand at 2,995-3,027 feet, 400 bbls.

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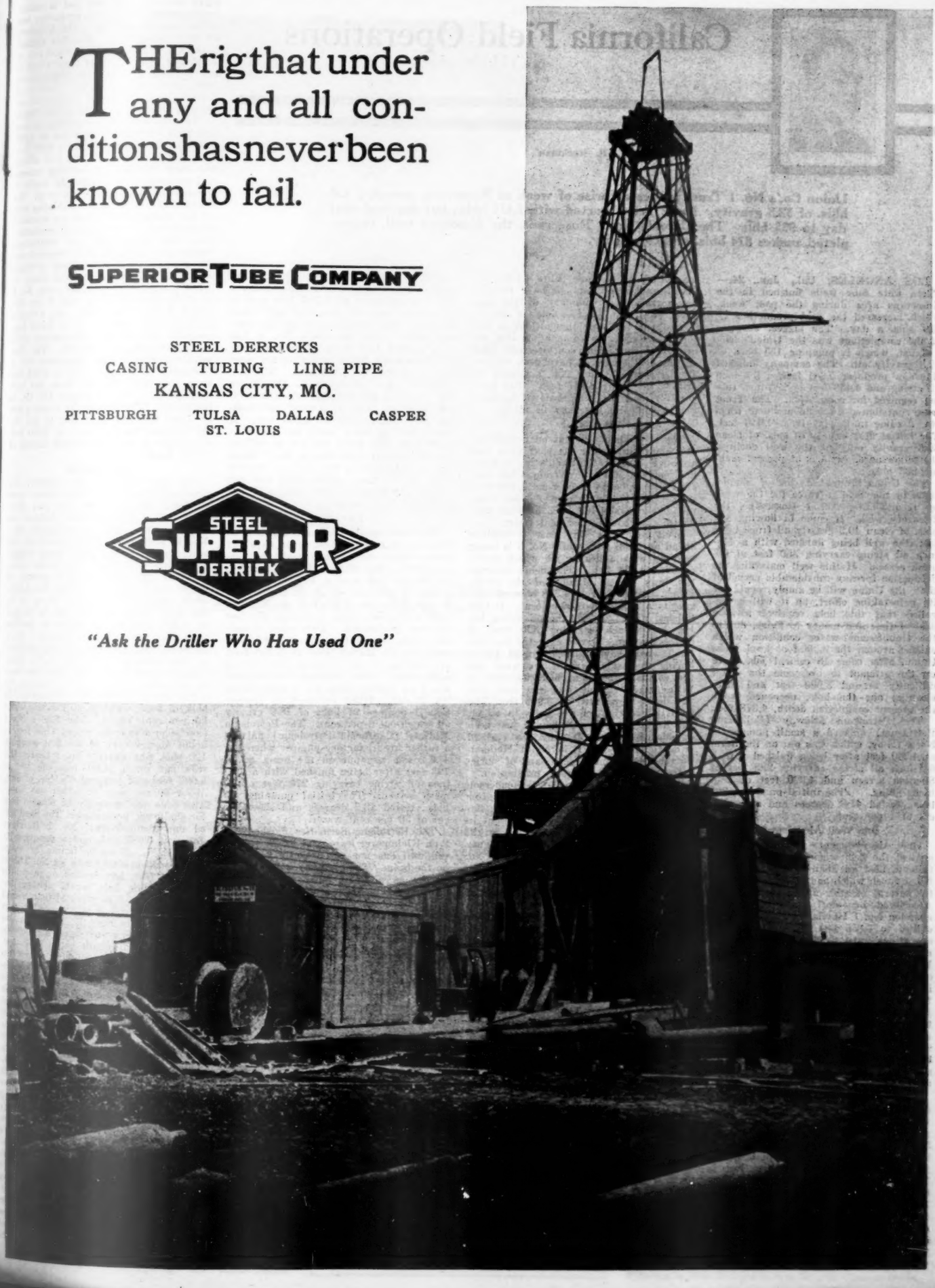

California Field Operations

By L. P. Stockman

Union Co.'s No. 1 Trust proves surprise of week at Rosecrans, pumping 135 bbls. of 32.8 gravity. No. 2 Trust started with 1,410 bbls., but declined next day to 933 bbls. The Union's No. 1 Rosecrans, the discovery well, recompleted, makes 874 bbls. of 40.9 gravity.

LOS ANGELES, Cal., Jan. 24.—There were four wells finished in the Rosecrans area during the past week, which increased the field production 2,620 bbls. a day. The biggest surprise of the completions was the Union's No. 1 Trust, which is pumping 135 bbls. of 32.8 gravity oil. The company finished this new producer 5,801 feet, a 6¾-inch oil string and 4,450 feet of 2½-inch tubing required for completion. The Trust lease contributed a second producer when No. 2 came in flowing from 4,940 feet. The initial flow was 1,410 bbls. of clean 36.6 gravity oil, but the well declined the following day and is at present making 933 bbls.

The Union brought its list of completions in this field to three for the week by recompleting No. 1 Rosecrans, the discovery well. It came in flowing 874 bbls. of clean 40.9 gravity oil from 4,378 feet, the well being finished with a 4½-inch oil string carrying 350 feet of 60-mesh screen. If this well maintains its production for any considerable period of time, the Union will be amply repaid for its painstaking effort, as it will be recalled that this hole required a good deal of time and money to finish, due to the troublesome water condition which existed around the 3,900-foot level. The Union, after some 15 cement jobs, gave up the attempt to overcome the water difficulty around 3,900 feet and after cleaning out the hole, deepened it to the present completion depth, 4,378 feet.

The Petroleum Midway (California Petroleum) finished a small pumper in No. 1 Colby, which was put on the beam at 4,340 feet after being finished with a 6¼-inch oil string carrying 222 feet of 80-mesh screen and 4,000 feet of 2½-inch tubing. The initial pumping, 201 bbls., tested 41.8 degrees and showed a cut of 1 per cent.

One Well Abandoned

One abandonment was chalked up against the field when the Sandberg Petroleum filed an abandonment notice on No. 1 Steel, which had been standing idle for several months, at 4,533 feet. The Associated has not finally decided to abandon No. 1 Haviland, which has been drilled to 4,855 feet, but is suspending operations until field developments warrant a resumption of work. The Julian Petroleum has staked two additional locations on its Athens lease and is hauling in material for the second rig. No. 1 Athens is still held up with a fishing job at 4,921 feet, with fair prospects for an ultimate recovery. The Marine's recent completion, No. 31 Athens, is holding up unusually well, the present flow being 1,322 bbls. This flow is proving a big incentive for work in this immediate area.

E. J. Miley has not recovered from the fishing job which developed recently while No. 1 Athens in the northwestern part of the field was being deepened at 5,238 feet, but should do so shortly. The Sentinel is also held up with a fishing job, a core barrel having been lost in No. 1 Brown at 5,375 feet. The Shell has passed the 5,000-foot level in No. 1 Leonis, the most northwesterly well in the field, but has not yet found anything resembling oil. The present formation is a gray sand. The Pan-American's No. 1 Anderson, offsetting No. 1 Leonis to the north, is redrilling at 2,600 feet, the bottom of the hole being 4,406 feet. The Standard appears to have marked the northeastern boundary of the district with a 5,750 foot-hole in No. 1 Cowan and although the outlook is not very promising, the company is still going on down. The southwestern edge of the field seems to have been defined by the Union, whose No. 1 Gordon is drilling ahead at 6,137 feet. The hole, however, is being carried down in order that a complete test may be made.

Dominguez

There was one well put on production at Dominguez during the past week and although another, the Shell's No. 1 Manual, made a short flow from 4,288 feet after being plugged back from 4,479 feet, it will not be listed as a finished completion since the 160 bbls. of fluid produced, cut about 50 per cent water.

Well No. 2 on this lease is drilling ahead at 4,236 feet, while No. 5 is being held up with a fishing job which developed at 4,005 feet. The field's completion was No. 4 Manuel of the Shell, which blew in flowing 4,378 bbls. of 30.1 gravity oil which cut 3 per cent. It was finished at 4,326 feet, the oil string being a 6¼-inch carrying 390 feet of 60-mesh screen. It was expected that the Shell would have finished No. 21 Reyes during the early part of the week but the company is being held up with a little water trouble and the hole has just been recemented at 3,953 feet. The Shell is working on five holes in all on the Reyes lease, No. 26 having just been spudded in. The company has reached a depth of 6,075 feet in No. 1 Hellman but has not found a deep sand of sufficient thickness to warrant production.

The United Oil Co.'s No. 2 Henderson made a short flow from 4,385 feet after being plugged back from 4,442 feet, but the large percentage of water present in the output compelled the company to kill the flow and recement. No. 3 Dominguez is making hole at 3,825 feet, while No. 4 is going ahead at 4,100 feet. The Union is rigging cable tools in an effort to recover the fish lost in No. 2 Carson at 4,779 feet. No. 3 Carson is being tested, following a cement job at 4,205 feet. The Union's two drillers on the Callender property, No. 8 at 3,302 feet and No. 9 at 3,291 feet, are making good progress. The Marland has finished No. 5 Dominguez at 4,296 feet and it is expected that the company will bring in a good well, probably during the coming week. The Marland's No. 4 has been plugged back from 4,370 feet to 4,350 feet, while No. 6 is fishing for some drill pipe lost at 4,180 feet. The Associated's next producer at Dominguez will be No. 5 De Francis, which is drilling in an oil sand at present and looking exceedingly good at 4,255 feet. A water test is being made on No. 6 at 3,881 feet. The Birch Oil Co. is drilling in gray sand at 6,280 feet in No. 1 Humphries, a wildcat in the extreme western part of the field. This hole has not shown anything to date and will undoubtedly be a duster.

Torrance

Two new producers were finished at Torrance during the past seven days but both of them were rather small and output dirty. The Standard Oil Co.'s No. 32 Marble Fee was a 147-bbl. pumper of 18.8 gravity oil which cut 3 per cent. It was drilled to 3,745 feet and finished with a 6¼-inch liner, including 450 feet of shop perforated. Two other Standard wells, No. 3 Quandt at 3,487 feet, and No. 33 Marble Fee at 3,470 feet, are drilling in the oil sand and nearing completion. The company recompleted No. 1 on Marble lease No. 1 after cleaning it out. When returned to production it pumped 97 bbls. of 18.9 gravity oil which cut 3 per cent. The Petroleum Midway (California Petroleum) finished a rather unsatisfactory pumper when No. 4 Carlson was put on the beam at 3,793 feet after being finished with a 6¼-inch oil string carrying 270 feet of 80 mesh screen. The initial pumping, 73 bbls., tested 13.2 degrees and showed a cut of 50 per cent water.

The Petroleum Securities finished No. 2 on Kleinmeyer lease A at 3,840 feet but the well has not yet actually been put on the beam. The company will probably list it as a small pumper during the coming week. A check of the deep wells in the field at present shows that all four have been plugged back following the failure to find a deep sand. The Shell has plugged back No. 2 Kettler from 5,373 feet to 4,580 feet and is making preparations to make a production test before abandoning it. The Chanslor-Canfield Midway Oil Co. has plugged back No. 1 Francis from 6,536 feet to 4,245 feet and is making preparations to test out No. 2 Dominguez, plugged from 5,091 feet to 5,065 feet. Neither of these holes has much of a chance of developing production at the present depth.

The Lora J. Oil Co. is putting its deep test well on a production test at 4,580 feet after plugging back from 4,780 feet. It is not believed that this well will be any more successful in securing commercial production than either the Shell's or Chanslor-Canfield Midway's tests. The General Petroleum, after circulating with oil for several weeks, has not succeeded in returning No. 20 Poggi to production. This hole has proved very troublesome because of sand and it is reported that the company is contemplating redrilling it. No. 1 Poggi is drilling ahead at 2,100 feet; No. 2 at 2,755; and No. 4 at 2,750 feet. Nos. 3 and 5 are rig and 6, 7 and 8 locations. No. 4 Carson at 3,345 feet and No. 5 at 3,200 feet, complete the General Petroleum's drilling operations at Torrance. The Consolidated Mutual has abandoned No. 1 Corbusier, an outpost well, at 3,244 feet as a dry hole and the lease has been surrendered. The Superior Oil Co. is bailing No. 57 Torrance for a casing test at 3,510 feet and preparing to put No. 56 Torrance on the beam at 3,810 feet. The latter is flowing a small amount of oil by heads.

Long Beach

One new well and two cleanout jobs practically sum up the development work at Long Beach during the past seven days. The Pan-American finished the only new well put on production when No. 2 Richardson was placed on the beam at 4,770 feet after being plugged back from 4,843 feet. The initial pumping was 225 bbls. of 23.6 gravity oil which cut 5 per cent. The Pan-American's deepest hole, No. 1 Stone at 5,495 feet, tested wet and will be plugged to 4,597 feet in an effort to produce from this zone. W. R. Ramsey's No. 1 McNaughton, a clean-out job, was put on the beam at 4,530 feet, after being plugged back from 5,059 feet but there is still some question as to whether the water has been shut off. It pumped 180 bbls. of fluid, which is still cutting about 30 per cent water. The Shell's No. 4 Coseboom also looks wet at 4,953 feet, as about 45 per cent of the first pumping, 120 bbls, was water. No. 4 Cherry Hill was put on a short pumping test at 5,097 feet and pumped 65 bbls. of fluid, about 50 per cent of which was water. This hole will probably be plugged back for shallower production. The Shell listed one abandonment, No. 1 Harriman Jones at 5,083 feet, and is removing the rig. E. L. Blanton, failing to secure commercial production in his No. 2 Trust at 4,614 feet, has decided to go a little deeper. This hole would neither flow nor pump but it is expected that a small well will be finished at a somewhat deeper depth. The Fred B. Foster Co. has started redrilling and deepening well No. 55, the present depth being 4,163 feet. The Hub Oil Co. is running a combination string in No. 2 Beck, a recompletion at 4,962 feet, and will probably be in a position to give the well a try within the next two weeks. The Nevada Signal Oil Syndicate is erecting a rig for well No. 2 and will start drilling within the next few days. The Anchor Oil Co. finished cleaning out No. 1 Lightburn, which has been plugged back from 4,696 feet to 4,257 feet, but apparently has not succeeded in securing a water tight plug. Upon being put on the pump the well made 174 bbls. of 19.2 gravity oil which is cutting 25 per cent water.

Another dry hole was chalked up against Huntington Beach when the Standard Oil Co. abandoned No. 3 Mills as a duster. The well pumped a good deal of salt water at 4,386 feet but never found enough sand to develop production. The company offset this abandonment with a new well, No. 9 on lease E, which came in pumping 30 bbls. of 14.3 gravity oil from 2,728 feet. The

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TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

Watertown, January 13, New Orleans, refined	60,702
Agwismith, January 13, New York, crude	105,019
Agwistone, January 14, New York, crude	104,005
Sunoil, January 15, Boston, crude	75,666
Nora, January 17, New Orleans, refined	90,861
Agwisun, January 18, New York, crude	75,140
Coastwise	
Lebec, January 12, Portland, fuel	70,890
Lubrico, January 13, Richmond, crude	85,885
La Purisima, January 13, San Diego, refined	32,095
Frank H. Buck, January 13, Avon, crude	65,733
W. S. Miller, January 13, Richmond, crude	75,160
Los Angeles, January 14, Martinez, crude	76,193
Capt. A. F. Lucas, January 15, Portland refined	37,281
Lubrico, January 16, Richmond, crude	86,252
W. S. Rheem, January 16, Richmond, crude	95,511
W. S. Miller, January 17, Portland, fuel	72,196
Tejon, January 18, Everett, fuel	70,246
Los Alamos, January 18, Seattle, refined	35,116
Frank H. Buck, January 18, Avon, crude	65,949
Exports	
H. T. Harper, January 12, Sydney, refined	32,111
San Teodora (Br.) January 13 England, refined	65,043
Mina Brea (Br.) January 14, Vancouver, crude	42,977
Mericos H. Whittier, January 16, Balboa, fuel	70,191
La Purisima, January 18, Honolulu, refined	38,420
Scottish Castle (Br.), January 18 China, refined	74,676
Toco (Br.), January 18, Chile, fuel	62,711
From Ventura	
William F. Herrin January 18, Avon, crude	42,718

Oil and Steel—*both burn*

LEAVE steel tanks exposed to the atmosphere. They will burn just as surely as the oil is burning in the tanks pictured above.

All burning or combustion is simply oxidation. When oil burns, it takes on air, or oxidizes. That is just what metal does. The oxidation of metal, however, is slower (it is slow combustion, while the burning of oil is rapid combustion) but it is just as sure.

How to combat oxidation

Modern methods of fighting oil fires involve keeping air from reaching the flames. A similar method is used to combat the costly burning or oxidation of tank metal. This method is to *keep* every detail of metal equipment sealed against air and moisture with a film of tough, long-wearing, red-lead paint.

Over and over again pure red-lead paint proves its value in completely protecting and lengthening the life of iron and steel oil equipment. Complete protection, however, means more than coating the metal with red-lead when you first put it into service. It calls for regular repaintings afterward. It demands always keeping an unbroken film of paint between the metal and air and moisture. When you give such protection, you prolong the life of your oil tanks indefinitely. Also, you can maintain your tanks *at a minimum painting cost per year*.

Oil operators find that Dutch Boy red-lead gives the metal in their tanks full protection. Dutch Boy red-lead is pure red-lead. Mixed with pure linseed oil and spread on the surface of clean metal, it sticks tight. It is impervious to air and moisture. It makes an elastic paint covering that expands and contracts with heat and cold without cracking.

Litharge

For oil refining you want litharge of correct physical character and extreme chemical purity. Such litharge is made by the makers of Dutch Boy red-lead and Dutch white-lead. At all times you can rely on its unvarying uniformity.

Our nearest warehouse can give you quick shipment in any quantity you desire.

You can get Dutch Boy red-lead in both paste and liquid forms. The liquid comes in the natural orange-red color, light and dark green, light and dark brown, and black. The paste comes in the natural color and can be shaded to browns, greens, black, etc.

Paint also cuts evaporation

When you want finishing coats of light-colored paint to reduce heat-absorption and decrease oil evaporation, use Dutch Boy white-lead on top of first coats of Dutch Boy red-lead.

Dutch Boy white-lead also has the properties that enable it to resist the penetration of air and moisture.

Write to our Technical Service Department at our nearest branch. Our specialists will be pleased to give you full information about metal protective paints to meet your specific requirements.

NATIONAL LEAD COMPANY

New York, 111 Broadway; Boston, 131 State Street; Buffalo, 116 Oak Street; Chicago, 900 West 18th Street; Cincinnati, 659 Freeman Avenue; Cleveland, 820 West Superior Avenue; St. Louis, 722 Chestnut Street; San Francisco, 485 California Street; Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Avenue; Philadelphia, John T. Lewis & Bros. Co., 437 Chestnut Street.

North Louisiana-Arkansas

By M. L. Vaughn

Operators feel more optimistic as result of crude price increases. Gasser making 50,000,000 feet completed in Springhill district of Webster Parish. Drilling activity shows marked increase in Ouachita County. Considerable activity developing in Cotton Valley district.

SHREVEPORT, La., Jan. 26.—A slight increase in production in both the Arkansas and Louisiana fields is an indication of improved conditions throughout this territory. The total increase from both fields averaged only 600 bbls. a day, of which Arkansas is credited with 435 bbls. and Louisiana with 165 bbls. Total production of the two fields averaged 154,540 bbls. a day, distributed as follows:

North Louisiana	
Bellevue	3,970
Caddo light	9,255
Caddo heavy	3,260
Cotton Valley	7,625
De Soto and Red River	4,395
Elm Grove	590
Haynesville	14,855
Homer	6,890
Total	49,850
South Arkansas	
El Dorado	9,660
Nevada County	1,075
Smackover light	31,880
Smackover heavy	59,980
Stephens	2,095
Total	104,690
Total both fields	154,540
Increase	600

Prosperity Seems Assured

Everything points to a prosperous year in the Shreveport and El Dorado oil territories and a substantial boost in the price of oil has added materially to the prevalent optimism of the fraternity. The first announcement of an advance in crude oil prices was made on Monday, January 19, when the Louisiana Oil Refining Corp. raised Smackover light from 10 to 20 cents, according to the varying grades. On January 20, the Standard Oil Co. announced a reconstruction of gravities, posting five prices instead of two for Smackover and raising the high grade from 26 to 28. On Friday, January 23, an advance of 25 cents on all grades in Caddo, Homer, Haynesville, Bull Bayou, De Soto and Red River and El Dorado, was posted by the Standard Oil Co., with a 15-cent advance in Smackover, Bellevue and Cotton Valley, followed immediately by all pipe line companies in this territory. Previous to January 20, the highest price paid for Smackover oil was 95 cents and with the regrading, the price was posted at $1.05 $1.10 and $1.15 for grades above 26. Adding to this, the advance of 15 cents on the twentieth, brings the price of high grade Smackover oil up to $1.30 a barrel, which is greatly encouraging to operators in this territory.

No advance was made by the Atlantic in the Stephens Field, in Columbia and Ouachita counties, Arkansas.

Smackover Shipments

Smackover oil shipments now amount to between 165 and 175 carloads a day and about 100 cars daily are being shipped from other points along the Missouri Pacific line in the Arkansas fields. Smackover is starting out on its third year as an oil field town with bright prospects of developing into a real city. Many of the first wells drilled in the Smackover Field are still producing and the numerous brick buildings of all kinds, are mute evidence of the faith in the future of this territory. Eighteen permits for wells in the south Arkansas Field were issued during the past week and a general resumption of drilling activity is being manifested.

Probably the largest well yet completed in the Springhill district in the north end of Webster Parish, was brought in last Friday by the Butler-McMurray Drilling Co., in No. 1 Wheeler, Section 35-23-11. The well is making 50,000,000 feet of gas at 2,789 feet. It will be connected at once with the Magnolia Gas Co.'s line to Beaumont, which will be allowed under the conservation laws to make 10,000,000 feet per day from the big gasser.

The Webster Parish gas fields are proving among the best in the State and can be deepened on for an adequate supply for this territory for many years to come. The Waskom district in Caddo Parish and East Texas, 15 miles west and a little south of Shreveport, is proving somewhat of a disappointment. When the Magnolia tied into the wells in this district, many of them went speedily into salt water and unless the deep sand development proves more successful there will soon be a cessation of activity in this territory. Several deep tests are being made which will be watched with interest.

Completions—Union County

Union County made a poor showing last week, drilling operations resulting in the completion of only four wells, two failures.

The Federal Petroleum Co. got salt water in its deep test on the Childs lease in Section 8-16-16, and the well was abandoned at 3,075 feet.

The Gulf Refining Co. completed No. 27 L. Werner, in Section 6-16-16, pumping 45 bbls at 2,258 feet.

The Lion Oil & Refining Co.'s No. 6 Graves, Section 3-16-15, came in flowing 500 bbls. of fluid, 85 per cent salt water and 4 per cent b.s., at 2,291 feet.

The Natural Gas & Petroleum Co. got salt water at 2,982 feet in No. 3 Frazier, Section 1-18-16, and the test was abandoned.

Ouachita County

Completions in the Smackover Field, in Ouachita County, numbered eight, all producers, with an aggregate initial production of 360 bbls.

The Arkansas Drilling Co. completed No. 1 Reynolds in Section 24-15-17, pumping 50 bbls. at 2,316 feet.

The Gulf Refining Co.'s Werner A-7, Section 26-15-17, made a 50-bbl. pumper at 2,312 feet.

The Magnolia Petroleum Co. completed No. 10 Smith, Section 31-15-16, pumping 45 bbls. at 2,253 feet.

The Texas Co. brought in five wells during the week: No. 2 Reynolds, Section 23-15-17, flowing 20 bbls. at 2,290 feet; No. 7 W. A. Smith, Section 31-15-16, pumping 50 bbls. at 2,253 feet, and No. 8 in the same section, pumping 65 bbls. at 2,261 feet; No. 1 Ward, Section 23-15-17, pumping 40 bbls. at 2,293 feet, and No. 2 Ward in the same section, pumping 40 bbls. at 2,280 feet.

Webster Parish

Webster Parish made a very good record during the past week, with four producing oil wells and four gas wells and only one failure.

In the Cotton Valley district, the Humble Oil & Refining Co. completed No. 2 Davis, Section 24-21-10, pumping 350 bbls. a day at 2,518 feet. The well tested 20 per cent b.s. and water. No. 3 Davis in Section 13-21-10, made a 50-bbl. pumper at 2,520 feet,20 per cent b.s. and water.

Moffatt & Murphy completed No. 2 Coyle, Section 28-21-10, pumping 300 bbls. at 2,579 feet.

The Ohio Oil Co. completed No. 11 Bodcau, Section 13-21-10, pumping 285 bbls. at 2,513 feet, and No. 14 Bodcau, Section 27-21-10, making 3,000,000 feet of gas with a spray of oil at 2,558 feet.

The Palmer Corp. got salt water at 3,471 feet in No. 1 Miller, Section 29-21-10, and the test was abandoned, and completed. No. 1 Tillman, Section 28-21-10, making 8,000,000 feet of gas with a spray of oil at 2,570 feet.

In the Springhill district, Belchic & Laskey completed No. 6 Pine Woods Lumber Co., Section 28-23-11, making 1,500,000 feet of gas at 2,678 feet.

In the Sarepta district, J. K. Wadley completed No. 1 Porter-Wadley, Section 31-23-9, making 30,000,000 feet of dry gas at 2,735 feet.

Ouachita Parish

The Southern Carbon Co. completed No. 42 fee, Section 7-19-5, making 6,500,000 feet of gas at 2,195 feet.

Nevada County, Arkansas

In the Nevada district, Smitherman-McDonald completed No. 8 McKinney, Section 10-14-21, pumping 300 bbls. at 1,204 feet.

The Humble Oil & Refining Co. drilled to 1,200 feet in its test on the C. A. Fincher lease in Section 6-15-22, and the well was abandoned at this depth.

Drilling Operations—Union County

There were no new wells started in Union County during the past week and very little activity of particular interest is under way. Bradley & Calvert are drilling at 2,020 feet in No. 2 Bradford, Section 8-16-15.

The British Allied Estate is arranging to drill in No. 2 Jones with cable tools at 2,025 feet, Section 21-16-15.

W. A. Dellmeyer, trustee, has a fishing job at 1,495 feet in No. 1 Ezell, Section 13-17-15. The Gulf Refining Co. has drilled to 1,700 feet in No. 11 Alphin, Section 2-16-15; location made for No. 1 T. P. Howard, Section 13-16-17; drilling at 2,050 feet in No. 28 L. Werner and rigging up No. 29, Section 6-16-16 and in same section rigging up No. 30 L. Werner and location made for No. 31.

Hickman and associates are down 2,175 feet in No. 1 Graves, Section 3-16-15. The Houston Oil Co. is down 1,300 feet in No. 1 Miller, Section 3-16-15.

W. W. Jones and others bailed No. 1 F. G. Murphy, dry at 2,052 feet and waiting orders, Section 18-16-15. The Liberty Oil Co. tested No. 1 Davis dry at 2,146 feet and is waiting orders, Section 31-16-14. The Magnolia Petroleum Co. set 10-inch casing at 160 feet in No. 4 Campter-Campbell, Section 13-16-17; drilling at 2,610 feet in No. 3 Harris, Section 16-16-16 and down 1,160 feet in No. 2 J. G. Smith, Section 2-16-17.

Matthews and associates set 6-inch casing at 2,620 feet in No. 1 Teele, Section 11-19-12, in wildcat territory. The Natural Gas & Petroleum Co. is sidetracking 4½-inch casing at 1,930 feet in No. 1 Lawton, total depth 2,285 feet, Section 10-16-15 and drilled to 2,025 feet in No. 5 Murphy, Section 8-16-15.

P. F. O'Brien is down 2,625 feet in No. 1 fee, Section 13-19-17. The Ohio Oil Co. set 8¼-inch casing at 1,950 feet in No. 5 Pate, Section 10-16-15. The Pure Oil Co. set 8¼-inch casing at 2,050 feet in No. 2 Hicks, Section 20-16-15 and in Section 15-16-15 has derrick up for No. 11 Craig. It is drilling No. 1 Lawton at 2,950 feet, Section 30-16-15.

The Standard Oil Co. set 6-inch casing at 1,925 feet in No. 6 J. H. Alphin, Section 3-16-15. Ward and associates are down 1,000 feet in No. 1 Goodwin, Section 16-16-14 and Weatherbee and others are waiting standard rig for No. 3 Rice at 2,265 feet, Section 6-16-16.

Ouachita County Drilling

A marked increase in drilling activity was noted in Ouachita County during the past week. Several wells were started and the Gulf Refining Co. has gone back into No. A-4 Goodwin in Section 5-16-15 to drill deeper. This well was completed in May, 1923, as a 100-bbl. well and making 5,000,000 feet of gas at 2,005 feet.

The Arkansas Drilling Co. has set 10-inch casing at 40 feet in No. 4 Reynolds, Section 24-15-17. Bray-Hawthorne are down 2,190 feet in No. 1 Goodwin, Section 12-15-17. The British Allied Estate has shut down No. 1 Lampkin fee at 1,500 feet, Section 6-13-18.

Burton, Trustee, is swabbing to test 35 feet of broken sand at 2,295 feet in No. 11 Hughes with 300 feet of oil in the hole, Section 21-15-16. R. R. Clark is down 1,500 feet in No. 3 Smith, Section 26-15-17.

The Cumberland Petroleum Co. has set 6-inch casing and drilled to 1,965 feet in No. 3 Reynolds, Section 23-15-17. Ellis & Dumas are down 1,520 feet in No. 3 Forest City Box Co. and have derrick pattern on location for No. 4, Section 31-15-16. The Empire Gas & Fuel Co. set 6 inch casing at 1,965 feet in No. 4 Bradley, Section 30-15-15.

The Forest Oil Co. has set 10-inch casing at 40 feet in No. 1 J. A. Cramer and has shut down No. 11 for water at 1,450 feet, Section 27-15-16. They are waiting on standard rig to pump No. 3 C. Minor at 2,325 feet, Section 20-15-16. Foster & McWilliams have set 10-inch casing at 40 feet in No. 1 Neeley, Section 26-15-16.

George & Jones have rig up for No. 3 Umstead, Section 4-16-15. Giles and others are fishing for liner at 2,030 feet in No. 1 Hardin, Section 26-15-16. Gilliland and associates have set 10-inch casing at 45 feet in No. B-5 LaGrone, Section 36-15-17. The Gulf Refining Co. is building derrick for No. 2 S. Bennett, Section 32-15-15; set 10-inch casing at 100 feet in No. 8 Fincher, Section 33-15-16; set 6-inch casing at 1,870 feet in No. 3 Henry Murphy, Section 2-16-15; setting 2-inch tubing at 2,325 feet in No. 2 Reynolds with 1,500 feet of oil in the hole and 16 feet of sand, Section 23-15-17 and have location made for No. 3. They have derrick pattern on location for No. 32 Werner and location made for No. 33, Section 32-15-16. In Section 26-15-17 they have set 10-inch casing at 170 feet in No. A-8 Werner and have location made for No. A-9.

Development Work

Howell and associates are running sand pump at 1,985 feet in 21 feet of sand in No. 2 Williams, Section 3-16-15. H. L. Hunt and associates have set 6-inch casing at 2,220 feet in No. A-4 Anderson, Section 23-15-17; they are waiting for standard rig to pump No. 2 Halton at 2,400 feet with 75 feet of broken sand, Section 23-15-17 and have rig up for No. 3. They have set 6-inch casing at 2,300 feet in No. 1 School House, same section and have 10-inch casing set at 45 feet in No. 4 Street, Section 26-15-17.

D. N. Johnson has set 10-inch casing and has 6-inch set at 1,890 feet in No. 3 Ferris, Section 34-15-15. J. W. King is down 1,100 feet in No. 2 Jackson, Section 27-15-16. Kourey and associates are down 1,800 feet in No. 1 Churchyard, Section 28-15-15.

The Mazda Oil Co. has set 10-inch casing at 60 feet in No. 2 Berry, Section 33-15-15. Owens and associates have set 6-inch casing and are drilling plug at 2,250 feet in No. 2 Smith, Section 22-15-17. The Penguin Oil Co. is arranging to test 6 feet of sand at 2,255 feet in No. 2 Hardin, Section 27-15-16.

Reynolds and associates have set 6-inch casing at 2,260 feet in No. 4 Brierton, Section 25-15-17. Riggs and others have

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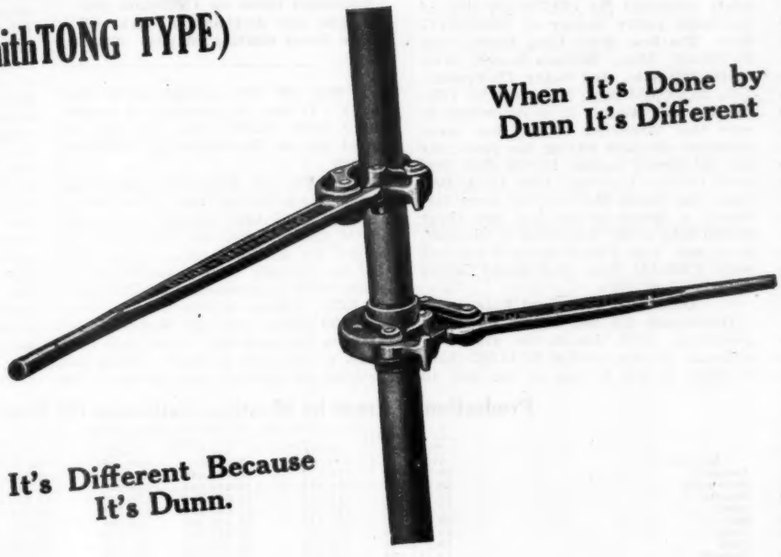

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TRADE MARK REG.

1924 Production

California Outlook Favorable for 1925

Conditions Somewhat Improved During 1924 as Compared to 1923. Dominguez Probably Will Be Big Factor in 1925

By L. P. Stockman

California recovered somewhat during 1924 from the chaotic conditions existing during 1923 and, although the present structure is still quite unsettled, things look favorable for 1925. We must not become overconfident, however, notwithstanding the fact that production and consumption are scheduled to reach a more equalized basis. Next summer should see better prices prevailing for crude and refined oils but because of the present large storage of crude, fuel, tops and refined oils, together with a still somewhat heavy output of crude, peak prices should not be anticipated.

The highest standard price to date for California crude was posted on July 10, 1920, the schedule quoting light refining oil at $2,95 per bbl. The price remained steady until May 13, 1921, when a cut of 25 cents per bbl. was made and compares with a maximum of $1.82 per bbl. at present for high grade oil.

The gasoline peak was established on August 4, 1920, when this commodity retailed in Los Angeles and San Francisco for 27 cents per gallon. This price was maintained until May 13 of the following year, but recent price cuts have brought this quotation down to 16½ cents a gallon, including a State tax of 2 cents.

Again First in Production

California, for the second consecutive year, was the premier producer of crude and carried off production honors with a total output during 1924 of 230,063,117 bbls., as compared with 263,729,000 bbls. during 1923. The daily average for these two periods was 628,588 bbls. and 722,545 bbls. respectively. During 1923, California accounted for over 36 per cent of the total United States' production, nearly as much as the combined output of Oklahoma and Texas, whose percentages were 22 per cent and 18 per cent respectively. These three States produced 76 per cent of the total United States production in 1923 and 75 per cent in 1924. Individually the States ranked in 1924, California 32 per cent, Oklahoma 24 per cent and Texas 19 per cent. Twenty-four fields of varying productivity contributed toward California's output in 1924, as compared with 22 during 1923, and, while the current output does not approach that attained in 1923, it was still of considerable proportions.

Long Beach was easily the biggest factor in 1924, followed by Midway-Sunset, Santa Fe Springs, Huntington Beach, Torrance, Elk Hills and Coalinga in the order named. These seven districts accounted for 182,780,228 bbls. of the total yearly output of 230,063,117 bbls. The first three, Long Beach, with 60,122,002 bbls., Midway-Sunset, with 37,464,889 bbls., and Santa Fe Springs, with 26,399,655 bbls., accounted for 123,986,546 bbls. alone. It is interesting to note that three out of the first seven principal districts during the past year are old timers located in the San Joaquin Valley. Coalinga, Lost Hills-Belridge and Santa Maria would have registered a larger output had not about 15,000 bbls. a day been shut in all year. As it was, Lost Hills-Belridge is credited with 1,526,371 bbls. and Santa Maria with 2,857,495 bbls.

Dominguez Developed Late

Dominguez did not attain its heavy production until late in the year and, although it only yielded 6,811,531 bbls. in 1924, it will be one of the best in 1925. Rosecrans and Inglewood, with 611,432 bbls. and 10,445 bbls., respectively, should show substantial gains in 1925, the increase, of course, being primarily dependent on the amount of development work done. Neither will cause any trouble unless unexpected deep sands are opened up. Inglewood to date has only developed four small wells, and, while Rosecrans is credited with several good wells, producers in this area do not maintain a satisfactory flow as they drop off very quickly after completion. It may be possible, of course, that a more prolific deep zone may be opened up as the result of additional drilling.

Additional tables on California production and development work will be found starting on page 198.

Montebello and Richfield produced at a steady rate during 1924. The former made 6,230,299 bbls. during the past 12 months and although the latter only accounted for 4,457,679 bbls., a new deep sand has recently been picked up which should result in increased production during 1925. Coyote is only credited with 5,683,559 bbls., but the Standard did not open its producers, which had been closed in, until late in April. When this curtailed production was released, the field showed a big gain. Production during the first three months averaged about 120,000 bbls. monthly, but in April, when the wells which had been closed in were opened up, the output jumped to 450,738 bbls. The field has been averaging around 600,000 bbls. a month since April and will swing into the new year doing in the neighborhood of 21,000 bbls. a day.

Year's Development Work

From a development standpoint, 1924 was a very successful period, two new fields, Rosecrans and Inglewood being opened up. During the previous year, Wheeler Ridge and Dominguez were discovered, while 1922 yielded Torrance, Santa Fe Springs and Long Beach started spouting in 1921, while Huntington Beach was born late in 1920. It is particularly interesting to compare the development of these recent fields and to note the peculiar characteristics of each. The first of California's recent major fields to be opened up was Huntington Beach, noted more for its steady production rather than for any spectacular performance. The first well finished was a small one, but it ws followed two months later, in October, 1920, by a 523-bbl. well. The peak was reached in April, 1923, nearly three years after the completion of the discovery well. The maximum output at that time was 113,228 bbls. a day but this figure has since declined to 41,966 bbls. daily during the

Production of Crude by Months—California Oil Districts

(Barrels of 42 United States Gallons)

Month—	1924 Total Barrels	1924 Daily Average	1923 Total Barrels	1923 Daily Average	1922 Total Barrels	1922 Daily Average	1921 Total Barrels	1921 Daily Average
January	20,912,500	674,597	16,457,445	530,885	9,717,632	313,472	10,087,424	325,401
February	19,341,226	666,939	16,426,759	586,670	9,060,383	323,585	9,186,907	328,104
March	19,913,262	642,363	19,608,192	632,522	10,250,547	330,663	10,494,863	338,544
April	19,299,849	643,328	20,695,959	689,865	10,186,081	339,536	10,169,759	338,992
May	19,833,576	639,793	21,635,365	694,689	11,156,193	359,554	10,446,171	336,941
June	18,807,999	626,933	22,667,106	755,570	10,731,943	357,731	10,111,381	337,046
July	19,274,755	621,766	25,262,082	814,906	11,598,291	374,138	10,225,171	329,844
August	19,112,998	616,548	26,440,005	852,903	11,848,882	382,221	10,020,027	323,227
September	18,308,233	610,274	25,762,487	858,750	12,205,146	406,838	7,859,394	261,980
October	18,696,559	603,115	24,576,400	792,787	13,419,432	432,885	7,063,807	227,865
November	17,767,034	592,234	22,397,848	746,595	14,035,537	467,851	8,808,468	293,616
December	18,795,126	606,294	21,899,247	706,427	16,426,810	497,639	10,094,549	325,631
Total	230,063,117	628,588	263,728,895	722,545	139,626,876	382,539	114,566,901	313,882

CALIFORNIA'S PETROLEUM P... From the Beginning of the Indu... to De...

Year	Kern River	McKittrick	Sunset	Midway	Elk Hills	Lost Hills-Belridge	Coalinga	Wheeler Ridge	Santa Maria	Summerland	Ventura-Newhall	Los Angeles and Salt Lake	Whittier	Fullerton
Prior	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	175,000	.....	.....	.....
1876	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,000	.....	.....	.....
77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	.....	.....	.....
78	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,227	.....	.....	.....
79	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,858	.....	.....	.....
1880	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40,552	.....	.....	.....
81	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99,862	.....	.....	.....
82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	128,636	.....	.....	.....
83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142,857	.....	.....	.....
84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	262,000	.....	.....	.....
85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	325,000	.....	.....	.....
86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	277,145	.....	.....	.....
87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	675,572	.....	.....	.....
88	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	690,333	.....	.....	.....
89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	303,220	.....	.....	.....
1890	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	307,360	.....	.....	.....
91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	323,600	.....	.....	.....
92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	385,949	.....	.....	.....
93	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	470,179	.....	.....	.....
94	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,800	570,469	196,094	.....	.....
95	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,904	474,624	749,695	.....	.....
96	.....	.....	.....	.....	.....	.....	14,119	.....	.....	39,792	298,866	902,868	.....	.....
97	.....	.....	.....	.....	.....	.....	70,140	.....	.....	130,136	631,135	1,064,158	.....	12,00
98	.....	10,000	.....	.....	.....	.....	154,000	.....	.....	132,217	763,871	1,126,000	.....	60,00
99	.....	15,000	.....	.....	.....	.....	439,372	.....	.....	208,370	743,998	1,052,036	.....	217,39
1900	826,775	80,000	12,500	.....	.....	.....	547,960	.....	.....	183,486	628,734	1,280,000	.....	511,55
01	3,278,840	430,450	188,600	4,235	.....	.....	525,433	.....	.....	203,616	495,943	1,830,000	.....	753,19
02	8,988,046	619,298	167,558	3,048	.....	.....	571,233	.....	94,188	136,252	646,496	2,027,000	.....	1,162,79
03	16,342,099	1,553,306	352,565	27,305	.....	.....	2,138,058	.....	204,890	131,125	682,185	793,765	.....	2,305,61
04	17,226,240	1,856,225	390,425	910	.....	.....	5,097,853	.....	700,460	120,506	660,779	1,241,304	.....	2,224,58
05	15,253,845	1,373,930	419,213	18,530	.....	.....	8,882,125	.....	3,402,800	96,871	476,898	2,226,768	.....	2,118,21
06	12,825,166	680,756	307,550	11,800	.....	.....	8,401,105	.....	4,799,411	72,810	404,379	2,675,650	.....	3,434,51
07	12,346,014	2,415,840	704,805	149,944	.....	.....	8,996,268	.....	8,249,236	69,060	435,584	3,372,465	.....	3,294,36
08	13,803,579	3,076,300	1,463,510	434,578	.....	.....	10,725,795	.....	8,699,350	67,862	498,015	5,138,959	.....	4,373,31
09	14,508,242	5,807,360	1,999,701	2,234,455	.....	.....	15,406,619	.....	8,017,455	66,338	516,628	4,350,898	.....	5,157,32
1910	14,776,435	5,471,513	9,218,904	11,174,207	.....	4,900	18,646,570	.....	7,607,830	74,725	652,575	2,729,618	.....	6,281,22
11	14,078,890	5,477,532	5,559,069	21,584,602	.....	168,410	18,311,251	.....	7,465,074	71,255	661,786	3,323,661	747,420	7,061,16
12	12,446,445	5,094,465	5,590,824	25,948,980	.....	2,680,961	19,546,122	.....	6,801,966	65,715	859,885	3,073,427	690,135	5,813,02
13	9,980,940	4,496,842	5,984,651	33,040,139	.....	5,274,552	18,604,626	.....	6,817,711	62,406	1,029,052	2,898,846	636,780	6,189,14
14	7,030,645	3,820,857	12,546,615	37,479,228	.....	4,830,921	15,925,887	.....	4,303,080	55,743	968,421	2,504,475	765,150	6,496,14
15	8,034,974	3,552,801	6,096,607	33,311,486	.....	4,318,550	13,548,159	.....	4,536,840	53,000	1,036,305	2,110,133	1,014,667	5,661,87
16	8,402,525	3,230,644	6,768,658	32,156,818	.....	4,852,431	14,381,493	.....	4,422,410	56,775	1,122,033	1,721,463	1,156,733	5,076,32
17	8,495,610	3,252,544	7,072,333	29,487,812	.....	6,295,329	15,938,543	.....	5,798,070	56,570	1,186,407	1,501,799	1,046,667	4,750,58
18	7,921,515	3,050,627	6,608,940	27,439,993	.....	5,420,079	16,283,066	.....	7,143,750	54,613	1,386,518	1,397,721	1,001,000	4,403,20
19	7,562,025	2,810,848	5,589,886	26,133,048	218,019	4,554,821	16,385,610	.....	6,030,910	53,680	1,792,465	1,341,415	842,184	4,350,00
1920	7,456,515	2,607,240	5,423,781	25,217,420	7,275,809	4,139,767	15,464,198	.....	5,928,060	54,910	2,122,449	1,311,264	736,776	4,591,40
21	6,715,680	2,956,101	4,613,965	24,172,350	18,085,425	3,261,281	12,340,637	.....	5,563,324	54,155	2,275,479	1,344,926	715,776	4,812,60
22	7,317,288	2,417,434	5,542,816	24,152,026	11,891,020	2,814,524	9,159,368	.....	5,797,903	48,339	3,015,877	1,258,287	646,218	4,964,60
23	6,816,134	2,191,702	6,235,889	32,567,892	8,174,371	1,843,483	6,210,829	128,674	3,003,672	52,862	3,702,404	1,192,036	761,313	4,130,70
24	6,773,321	2,094,598	6,136,213	31,328,676	13,589,311	1,526,371	10,144,438	342,357	3,857,495	53,201	4,030,169	907,483	.....	.....
Total	349,208,688	69,343,311	103,905,576	408,076,972	59,297,265	51,986,681	281,860,877	471,031	115,245,875	2,545,094	39,612,878	59,544,234	10,753,170	64,670,0

past month, December, 1924. Edgewater was more pronounced in this field than in any of the other recent districts, although this condition is, of course, present in all oil fields to a more or less degree. Huntington Beach's biggest year was in 1923, both from a development and production standpoint. Of the total number of new wells, 397, finished to date in the field 120 were completed in 1923. The district produced a total of 40,500 bbls. in 1920; 2,518,812 bbls. in 1921; 11,169,383 bbls. in 1922; 34,355,642 bbls. in 1923 and 17,533,520 bbls in 1924. There are 298 producing wells in the field at present, the daily well production being 141 bbls., as compared with a high of 740 bbls. recorded in April, 1923.

Santa Fe Springs

Santa Fe Springs was the most spectacular of late fields and enjoyed the fastest rise. Maximum monthly production was attained in August, 1923, less than two years after No. 1 Bell, regarded as the initial well, was brought in. There was some small production secured previously but this was later found to be very near the edge of the field. From the high of 322,522 bbls. daily in August 1923, the output has declined to 50,641 bbls. per day in December, 1924. The largest yearly production was recorded in 1923. The district started off with a total of 208,200 bbls. in 1921, but increased the output in 1922 to 11,032,955 bbls. The production in 1923 was 79,781,275 bbls, and in 1924, 26,399,655 bbls. The 354 wells producing in December, averaged 143 bbls. each per day, as compared with a high of 2,193 bbls. registered in April, 1923, at which time there were 93 wells actually on production.

Long Beach has caused more embarrassment to production prognosticators than all the other fields combined. This is primarily due to the presence of so many prolific sands. Just as the field would start on the down grade another deep sand would be opened up and the output would register a corresponding gain. After all the sands had been

(Continued on Page 240)

Consumption and Shipments of California Crude, Fuel Oil and Tops

(Barrels of 42 United States Gallons)

Month—	1924 Total Barrels	1924 Daily Average	1923 Total Barrels	1923 Daily Average	1922 Total Barrels	1922 Daily Average	1921 Total Barrels	1921 Daily Average
January	18,582,820	599,446	14,809,963	477,741	8,478,468	273,499	9,777,496	315,403
February	18,135,554	625,364	13,742,927	490,819	8,511,356	303,977	8,887,474	317,401
March	18,707,048	603,453	17,846,282	576,009	8,833,280	284,945	9,144,432	294,982
April	18,630,917	621,031	14,323,928	610,798	8,144,625	271,487	9,156,477	305,216
May	17,657,290	569,590	21,016,650	677,956	8,510,886	287,447	7,888,745	254,476
June	17,742,081	591,403	19,509,822	650,327	9,185,576	306,186	8,321,097	277,370
July	18,386,385	593,109	19,286,111	622,133	9,863,189	318,167	8,468,739	273,185
August	17,732,518	572,017	20,548,137	662,843	9,268,978	298,999	7,868,536	253,824
September	18,054,229	601,808	23,354,241	778,475	10,218,039	340,601	8,060,674	268,689
October	18,827,572	607,341	21,287,900	686,706	12,105,901	390,609	7,677,990	247,677
November	16,326,248	544,175	21,207,472	706,916	11,850,645	395,021	8,893,287	296,443
December	18,802,004	606,516	22,055,237	711,459	13,996,606	451,503	8,484,523	273,694
Total	217,583,666	594,491	232,988,670	638,325	119,370,518	327,042	102,629,470	281,177

Stock Range of Crude, Fuel Oil and Tops in Pacific Coast Territory

(Barrels of 42 United States Gallons)

On hand—	1924 Total Stocks	1924 Monthly Surplus	1923 Total Stocks	1923 Monthly Surplus	1922 Total Stocks	1922 Monthly Surplus	1921 Total Stocks	1921 Monthly Surplus
January 1	91,925,153	.....	61,184,928	.....	31,556,277	.....	19,618,846	.....
January 31	94,254,833	2,329,680	62,832,410	1,647,482	32,795,441	1,239,164	19,928,774	309,928
February 28	95,460,505	1,205,672	65,516,242	2,683,832	33,344,469	549,028	20,228,207	299,433
March 31	96,666,719	1,206,214	67,278,152	1,761,910	34,761,736	1,417,267	21,578,638	1,350,431
April 30	97,336,651	668,932	69,650,183	2,372,031	36,803,192	2,041,456	22,591,920	1,013,282
May 31	99,514,927	2,176,286	70,168,898	518,715	39,038,529	2,235,337	25,148,346	2,556,426
June 30	100,577,855	1,065,918	73,326,182	3,157,284	40,584,895	1,546,366	26,938,610	1,790,264
July 31	101,466,225	888,370	79,302,153	5,975,971	42,319,997	1,735,102	28,695,042	1,756,432
August 31	102,846,705	1,380,480	85,194,021	5,891,868	54,272,194	2,579,904	30,846,533	2,151,491
September 30	105,922,092	254,004	87,602,267	2,408,246	56,259,301	1,987,107	30,645,253	*201,280
October 31	105,791,079	*131,013	90,890,767	3,288,500	57,569,832	1,310,531	30,031,070	*614,183
November 30	107,232,865	1,441,786	92,081,143	1,190,376	59,754,724	2,184,892	29,946,251	*84,819
December 31	107,226,987	*5,878	91,925,153	*155,990	61,184,928	1,430,204	31,556,277	1,610,026
Total	.....	12,479,451	.....	30,740,225	.....	20,256,358	.....	11,937,431

*Shortage.

NOTE—Stocks previous to August 31, 1923 are those reported by the Independent Oil Producers Agency and show crude storage exclusively. Figures since August 31, 1922, are those shown by American Petroleum Institute and contain all crude, fuel and tops in storage. The break between August 31, 1924, and September 30, 1924, is due to the fact that figures previous to this time covered California only. Data since September 1, 1924, covers the entire Pacific Coast territory, including Alaska and Hawaii. The present stock figures contain all crude fuel and tops in storage whether en route or in field, pipe lines, tank farms, refineries or distributory points.

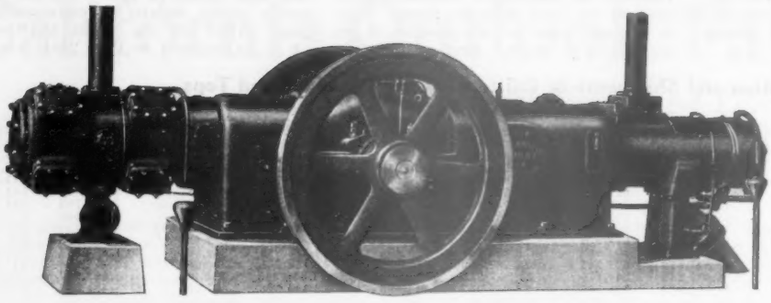
California Crude Oil Production, January-December, 1924, Inclusive

(Barrels of 42 U. S. gallons.)

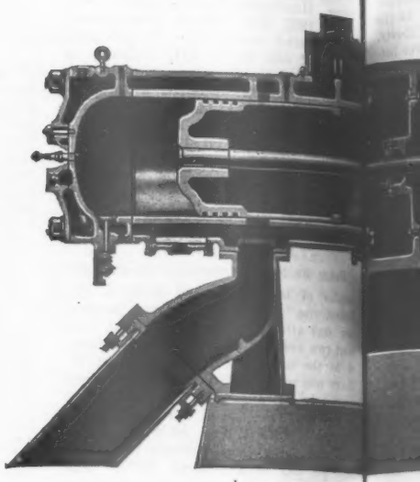
District—	January	February	March	April	May	June	July	August	September	October	November	December	Total
Kern River	589,963	552,304	571,439	577,977	572,828	560,788	573,639	578,221	547,815	551,406	543,397	553,544	6,773,361
McKittrick	176,253	169,669	179,156	174,583	172,731	169,422	174,574	176,275	173,635	176,240	174,052	178,008	2,094,598
Midway-Sunset	2,622,975	2,760,183	3,016,701	2,974,103	3,233,550	3,247,200	3,297,233	3,254,649	3,098,017	3,398,181	3,271,117	3,290,980	37,464,889
Elk Hills	694,588	1,071,306	1,189,088	1,100,926	1,142,576	1,167,261	1,188,844	1,271,661	1,228,185	1,213,630	1,152,521	1,169,025	13,589,311
Lost Hills-Belridge	106,814	101,562	169,216	97,588	101,484	140,710	129,395	145,151	143,455	153,591	145,162	152,243	1,526,371
Coalinga	545,750	630,695	950,464	1,115,243	1,116,939	986,064	1,014,151	767,772	732,542	764,245	745,760	774,803	10,144,428
Wheeler Ridge	23,254	25,931	28,734	26,777	25,150	31,288	30,523	32,632	33,678	31,449	25,511	27,430	342,357
Watsonville and miscellaneous	1,783	1,667	1,782	1,725	1,782	1,725	1,783	1,783	1,730	1,736	1,725	1,857	20,979
Santa Maria	254,546	220,927	244,924	242,644	223,421	236,066	247,055	250,122	232,978	228,128	234,881	231,803	2,857,195
Summerland	4,511	4,220	4,508	4,365	4,513	4,365	4,508	4,511	4,370	4,454	4,365	4,511	53,201
Ventura-Newhall	282,854	284,143	306,322	334,702	340,319	321,090	343,743	387,741	362,000	358,567	337,951	360,730	4,020,169
Los Angeles-Salt Lake	97,081	84,483	80,297	71,045	76,652	80,749	74,224	76,684	66,480	66,779	67,194	65,785	907,453
Whittier	63,261	58,564	62,266	59,217	64,766	61,899	65,939	69,250	64,622	67,376	63,393	60,856	761,211
Fullerton	303,647	314,934	323,285	321,848	379,170	351,335	361,984	351,021	345,209	362,149	349,360	356,847	4,120,789
Coyote	129,490	117,872	117,635	459,738	583,235	564,901	606,272	628,511	598,574	625,542	622,309	629,480	5,683,559
Santa Fe Springs	4,278,179	3,066,520	2,682,741	2,181,404	2,149,880	1,831,457	1,846,421	1,797,595	1,700,493	1,702,171	1,592,924	1,569,870	26,399,655
Montebello	529,013	537,732	522,312	498,729	519,101	501,524	520,108	524,141	503,580	524,839	507,193	542,037	6,230,299
Richfield	414,666	399,788	397,265	380,173	378,322	358,474	358,387	367,347	344,906	357,757	343,713	356,881	4,457,679
Huntington Beach	1,986,723	1,735,201	1,733,090	1,540,845	1,506,100	1,382,184	1,340,202	1,290,901	1,238,214	1,261,381	1,217,725	1,200,954	17,533,520
Long Beach	6,778,037	6,351,371	6,104,670	5,275,313	5,172,472	4,786,362	4,778,989	4,620,041	4,279,353	4,228,986	3,853,534	3,993,593	60,122,002
Torrance	972,261	800,311	1,168,181	1,644,023	1,783,670	1,716,885	1,776,650	1,741,121	1,629,463	1,632,867	1,367,586	1,393,315	17,526,133
Dominguez	56,851	41,843	119,285	216,881	266,112	286,025	519,600	740,414	900,630	1,009,852	1,013,006	1,641,042	6,811,531
Rosecrans	.....	.....	.....	.....	18,801	21,225	20,631	35,454	77,915	71,366	129,256	236,785	611,432
Inglewood	.....	.....	.....	.....	.....	.....	.....	.....	410	3,895	3,000	3,140	10,445
Total	20,912,500	19,341,226	19,913,262	19,299,849	19,833,576	18,807,999	19,274,755	19,112,998	18,308,233	18,696,559	17,767,034	18,795,126	230,063,117
Daily average, 1924	674,597	666,939	642,363	643,328	639,792	626,933	621,766	616,548	610,274	603,115	592,234	606,294	628,588
Daily average, 1923	530,885	586,670	632,522	689,865	694,689	755,570	814,906	852,903	858,750	792,787	746,595	706,427	722,416
Daily average, 1922	313,472	323,585	330,663	339,536	359,564	357,731	374,138	382,221	406,838	432,855	467,851	497,639	382,539
Daily average, 1921	325,401	328,104	338,544	338,992	336,941	337,045	329,844	343,227	261,980	227,865	293,616	325,631	313,262

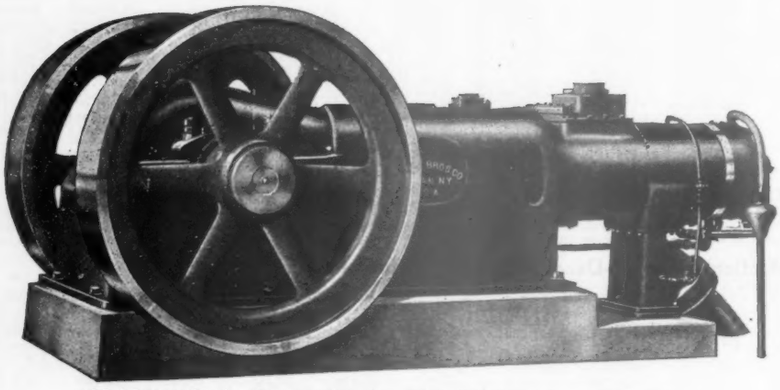
PETROLEUM PRODUCTION
to December 31, 1924, by Fields

Fullerton	Coyote	Santa Fe Springs	Montebello	Richfield	Huntington Beach	Long Beach	Torrance	Dominguez	Rosecrans	Inglewood	Watsonville and Miscellaneous	Total	Year Prior
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	176,000	
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	1876
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,000	77
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,227	78
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,858	79
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40,552	1880
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99,862	81
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	128,636	82
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	143,867	83
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	262,000	84
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	326,000	85
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	377,145	86
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	678,573	87
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	690,333	88
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	303,220	89
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	307,360	1890
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	323,600	91
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	335,049	92
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	470,179	93
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,715	783,078	94
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,116	1,245,339	95
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,135	1,257,780	96
12,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,000	1,911,569	97
60,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,000	2,249,088	98
317,539	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,500	2,677,875	99
511,550	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	248,945	4,319,940	1900
753,198	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,710,315	01
1,103,793	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14,356,910	02
2,395,613	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,670	24,334,481	03
2,224,550	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	39,392	29,548,634	04
2,118,312	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29,650	34,298,041	05
2,434,512	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,090	33,623,229	06
3,294,206	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69,090	40,102,512	07
4,272,131	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	125,475	43,306,797	08
5,157,252	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	126,775	58,191,723	09
6,281,221	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	58,970	77,697,568	1910
7,081,165	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61,350	83,744,044	11
5,813,027	1,359,303	.....	.....	.....	.....	.....	.....	.....	.....	.....	45,870	90,074,439	12
6,189,561	3,777,359	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,375	97,867,184	13
6,495,100	6,998,659	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,375	103,623,696	14
5,661,978	6,610,508	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,375	89,566,779	15
5,076,306	8,588,699	.....	.....	.....	.....	.....	.....	.....	.....	.....	27,450	91,823,303	16
4,750,582	11,458,471	.....	789,635	.....	.....	.....	.....	.....	.....	.....	27,375	97,367,832	17
4,493,281	12,614,599	.....	6,839,267	.....	.....	.....	.....	.....	.....	.....	27,375	101,637,870	18
4,350,084	10,240,359	.....	12,100,784	965,408	.....	.....	.....	.....	.....	.....	27,375	101,221,784	19
5,391,497	8,732,435	.....	11,124,585	3,565,346	32,116	.....	.....	.....	.....	.....	25,610	105,721,186	1920
6,012,539	7,419,050	208,216	9,065,723	5,306,962	2,518,812	75,588	.....	.....	.....	.....	24,035	114,849,924	21
6,512,974	7,000,373	11,032,955	6,692,024	8,314,528	11,169,383	18,560,595	190,785	.....	.....	.....	20,358	139,626,876	22
4,964,661	2,447,825	79,781,275	4,075,669	6,121,335	34,355,642	68,810,361	3,128,694	157,698	.....	.....	21,068	263,725,896	23
4,120,789	6,683,559	26,399,655	6,230,299	4,457,679	17,533,520	60,122,002	17,526,133	6,811,531	611,432	10,445	20,979	230,063,117	24
64,670,974	92,931,198	117,422,101	56,917,986	30,631,258	65,615,473	147,568,546	20,845,602	6,969,229	611,432	10,445	1,152,463	2,097,200,266	Total



CLARK Type S Compressor, Built in 60 and 80 H.P. Sizes



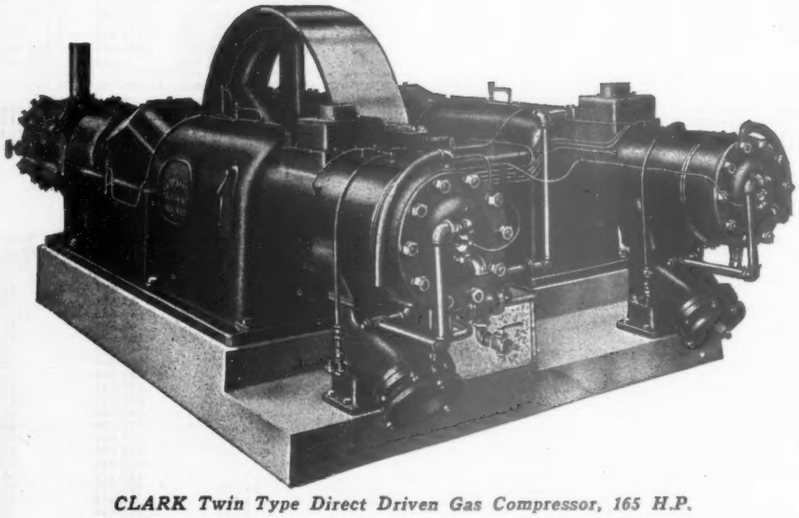


CLARK 2-Cycle Gas Engine for Belt Driving of Compressors,— 60, 80, and 165 H.P. Sizes

Only Unit b

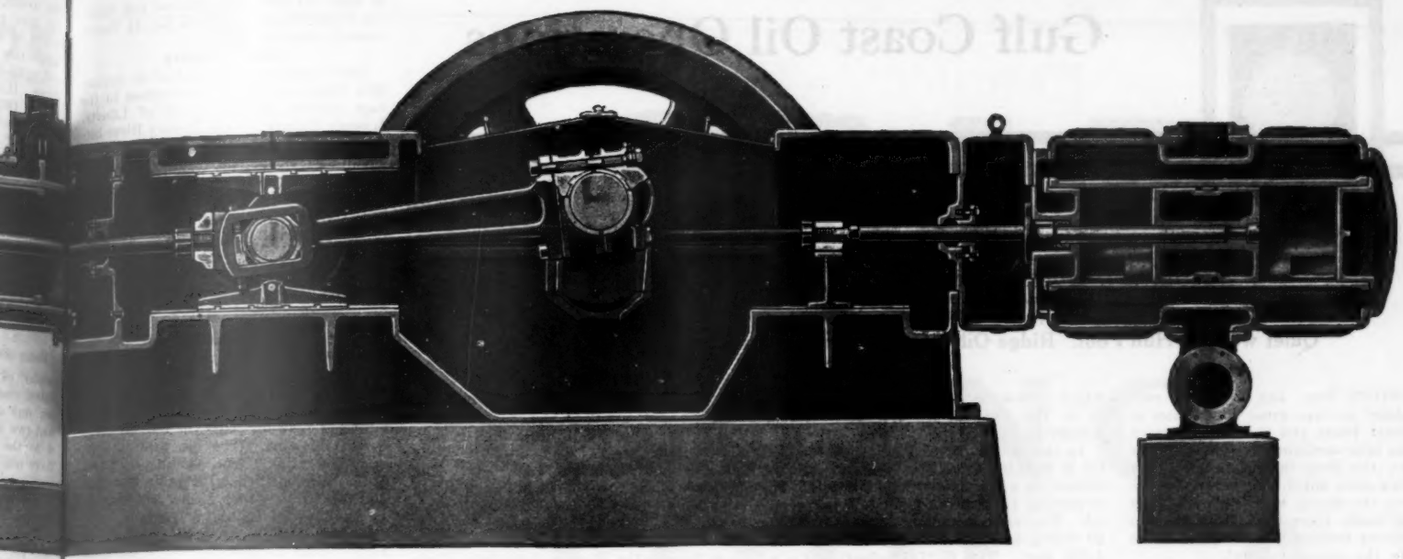
SALIENT FEATURES

- *Greatest Overload Capacity*
- *Nearly 100% Operating Efficiency*
- *Centralized Operating Control*
- *Simple to Operate*
- *All Parts Readily Accessible*
- *Oversize Bearings—Rugged Strength*
- *No Valves to Grind*
- *Positive Air Starter*
- *Lay-Shaft Drive*
- *Automatic Over-Speed Safety Stop*
- *Oversize Exhaust*
- *Direct Drive of Compressor from Crosshead Pin*
- *Built in By-Pass Valve for Starting*
- *Compressor End of Bed Standard Taking All Sizes of Compressor Cylinders*
- *Spark Plug Water Cooled*
- *Clark Improved Strip Compressor Valves*
- *Filtering System for Lubricating Oil*



CLARK Twin Type Direct Driven Gas Compressor, 165 H.P.

CLARK CO



t to Operate at Full Rated Load

With CLARK Compressors Underloading no Longer Necessary—Extra-Rugged Construction

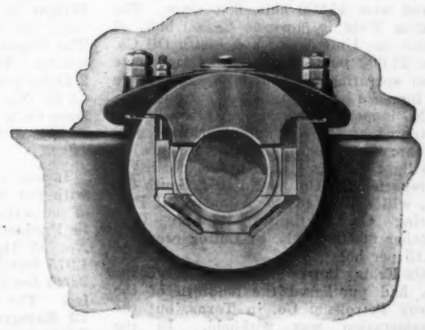
Clark Bros. have revolutionized the industry in that they have demonstrated that a compressor unit may be operated successfully *at its full rated load.* In the past users of other compressors than CLARK have been forced, by sad experience, to figure quite too conservatively, but we have been able by actual demonstration to convince users that such a practice of underloading is unnecessary with our compressors. In many instances they are being operated continuously with a considerable *overload,* yet at over 99% efficiency.

The unusually heavy and rugged construction of the CLARK is one of the main reasons for its high efficiency. Greater strength and larger bearing surfaces are provided than standard safe engineering practice demands. The demand for this super-compressor unit is keeping the Clark factory working night and day. It merits your investigation. Ask for full particulars.

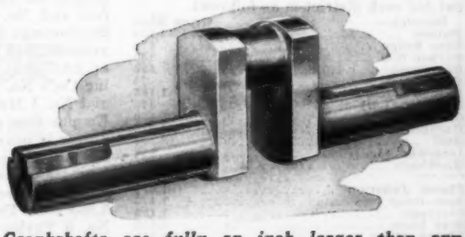
Distributors

East, Mid-Continent, Wyoming
GAS ENGINEERING AND CONSTR. CO.
Kennedy Bldg., Tulsa Casper, Wyo.
Union Bank Bldg., Pittsburgh

Pacific Coast Fields
SMITH, BOOTH, USHER COMPANY
228 S. Central Ave., Los Angeles
50 Fremont St., San Francisco



Main Bearing. Four Quarter Wedge Adjustment Type



Crankshafts are fully an inch larger than any others. We have never had a crankshaft failure

PRESSORS

Gulf Coast Oil Operations

By P. L. McGreal

Decline in production continues, notably in Goose Creek Pool. Wildcat south of Liberty is makng 500 bbls., but bad weather delays other operations there. The Texas Co.'s workover, No. 243 Landslide, Humble Pool, flows 1,000 bbls. Quiet week in Hull Pool. Ridge Oil & Gas Co. wildcat stages big blowout.

HOUSTON, Tex., Jan. 26.—The estimated daily average gross production in the Coastal Pools and the Southwestern fields has been declining since the first of the year, the drop in the Goose Creek Pool being most noted. However, Orange is also on the slump, but new wells from the deep sands there flash from time to time without holding up, except to cause spurts in the average output.

The wildcat producer south of Liberty, Texas, is credited with an average of 500 bbls. for the week and Vacuum Oil Co.'s producer in Calcasieu Parish, Louisiana, near Lockport, is still making 430 bbls. per day. The Gulf company is running the oil from the Liberty well and the Vacuum Oil Co. ships to Texas City in tank cars, thence to the Atlantic Seaboard refinery in tankers.

The estimated daily average production for the week in the Gulf Coast pools is placed at 73,630 bbls. against 73,735 bbls. last week. The estimate for the Southwest fields is placed at 41,185 bbls., compared with 45,290 bbls. last week. The Luling Field is down to 28,000 bbls. of which the United North & South Oil Co. has 21,000 bbls. Only a few rigs have been operating there and no effort made to increase or maintain the output.

No immediate advance in prices is anticipated by Coastal and Southwest producers, notwithstanding the advance in the light gravity crudes to the north. It is reported the United North & South Oil Co. will deliver to the Atlantic Oil Producing Co. (Atlantic Refining Co.) another 600.000 bbls. of Luling crude at $1.15 per bbl.

On Friday it was announced The Texas Co. had purchased the holdings of the Kirby Petroleum Co. in Texas, but the consideration was withheld. In the Coastal division, the Kirby Co. holds acreage at Barber Hill, Batson and in Brazoria County. The company has no production in the heavy gravity division.

Daily Average Gross Production

The estimated daily average gross output for each district is as follows:

District—	Gross Bbls.
Batson	1,595
Blue Ridge	675
Barber Hill	130
Big Creek	590
Dayton	75
Damon Mound	1,185
Edgerly (La.)	470
Goose Creek	8,850
Humble	6,010
Hull	15,100
Jennings (La.)	695
Markham	95
Orange	11,300
Pierce Junction	1,475
Spindletop	1,170
Saratoga	1,495
Sour Lake	3,600
Vinton (La.)	5,800
Welsh-Anse La Bute	80
West Columbia	12,200
*Miscellaneous	1,150
Total	73,740
Southwest Fields—	
Luling	28,000
Laredo	4,210
Somerset	2,620
Callihan	505
Rockdale-Minerva	450
Jim Hogg County	5,400
Total	41,185
Grand total	114,925
Grand total last week	119,025
Difference (decrease)	4,100

*Calcasieu Parish, Louisiana, 430 bbls.; Liberty County, Texas, 500 bbls. Balance scattered, Nacogdoches, Big Hill, High Island, Hockley, Stratton Ridge and New Iberia, La.

The best well of the week was a worked over hole in the Humble Pool, which is flowing 1,000 bbls. at 3,000 feet. It is The Texas Co.'s No. 243 on the Landslide lease.

In the Goose Creek Pool, the Humble Oil & Refining Co.'s No. 47 Smith can be classed as a water well at 4,100 feet. It is flowing 1.000 bbls. of fluid, 5 per cent oil. The same company is bailing Nos. 59 Smith at 4,725 feet and 60 Smith at 4,200 feet. The Gulf Production Co.'s No. 1 Wright was worked over at 1,575 feet and is flowing 150 bbls. by heads.

Wells drilling there include the Humble Oil & Refining Co.'s No. 6-A Tabb at 2,610 feet. No. 1 on Hogg Island in the bay is rigging. The Gulf Production Co.'s No. 18 John Galliard is at 3.005 feet and No. 5 Houston-Smith below 3,000 feet. No. 17 State land in the bay is at 2,910 feet; No. 10 Tabb fee is at 2,900 feet. The company is preparing to deepen Nos. 3 Paddock, 4-A Wright and No. 1 Hirsch in the bay. The Gulf Coast Oil Corp. is deepening No. 31 Galliard at 2,619 feet. The Southern Exploration Co.'s No. 2 Wright is at 1,910 feet. The Sun Oil Co.'s No. 5 M. & G. is working over. The Copeland Oil Co.'s No. 5 Bryan is fishing. The Inca Production Co.'s No. 2 Duke is below 3,400 feet with a derrick up for No. 1 Scorrgea. The Hisgen Petroleum Co.'s No. 2 Busch, north of production, is drilling at 4.310 feet.

Hull Pool

It was a quiet week in the Hull Pool with but few wells completed and these of no particular importance. The Republic Production Co.-Houston Oil Co.'s joint No. 95 Dolbear is making 75 bbls. at 1,975 feet. No. 98 Dolbear is bailing at 2.025 feet, as is No. 99 Dolbear at 1,425 feet. The Houston Production Co.'s No. 12 Barngrover is good for 75 bbls. at 3,180 feet. The Gulf Production Co.'s No. 8 Morris-Phillips was deepened to 2,800 feet and abandoned in salt water. Its No. 44 Phoenix is bailing at 2,700 feet.

On the Phoenix lease, the Gulf company's No. 45 Dolbear is drilling at 3,207 feet and No. 46 at 1.010 feet. No. 14 Scarborough is at 3,355 feet. No. 15 is around 2.345 feet. No. 11 Baldwin fee is at 2,645 feet. The Humble Oil & Refining Co.'s No. 10 Guedry is drilling deeper and No. 1 Merchant is at 3.315 feet. The Empire Gas & Fuel Co.'s No. 16 Barngrover is nearing 4,000 feet. The Yount-Lee Oil Co.'s No. 1 Stengler is working over. The Mecom Oil Co.'s No. 6 Mecom is at 3.990 feet and No. 7 is deepening at 3,865 feet. The Higgins Oil & Fuel Co.'s No. 5 Taylor is deepening at 3.710 feet. The Republic Production-Houston Oil Co.'s No. 32 Dolbear is deepening at 2,234 feet. No. 90 is deepening at 3,200 feet and No. 56 Dolbear is rigging to drill deeper. No. 100 is being rigged to start drilling.

Orange Pool

In the Orange Pool, the Rycade Petroleum Corp.'s No. 1-E Cow Bayou was abandoned at 4,450 feet. Mutual Oil Co. temporarily quit No. 6 Chesson at 4,675 feet. The Sun Oil Co.'s No. 3 Brown is bailing at 4,325 feet after being worked over. The Orange Petroleum Co.'s No. 8 Chesson shows salt water at 4,725 feet and the Gulf Production Co.'s No. 17 Hager fee on the west side of Cow Bayou is in a sand at 4,400 feet.

On the southeast side of the pool, the Brownie Babbittee Oil Co.'s No. 4 McLean is deepening at 4,475 feet. The Tillery Oil Co.'s No. 1 State land is fishing at 3,980 feet. The Sun Oil Co.'s No. 6 Gunstream is at 4,425 feet. The Andrews Cameron Oil Co.'s No. 2 State land is idle at 3,800 feet. The Gulf Co.'s No. 2 Consolidated is at around 5.000 feet. No. 8 Pevito is below 4,510 feet. In Cow Bayou, the Rycade Petroleum Co.'s No. 2-C is rigging to work over. No. 14-A is at 4,135 feet. On the Chesson, the Mutual Oil Co.'s No. 7 is fishing; No. 4 is starting to work over and No. 9 is drilling around 4,400 feet. The Humble Oil & Refining Co.'s No. 9-B Chesson is at 4,415 feet with No. 1 shut down at 4,190 feet. No. 21-B is drilling at 4,717 feet. No. 14-A is at 4,609 feet; No. 11 Winifree is at 4,645 feet; the Gulf Co.'s No. 4-A Chesson is at 4,565 feet and No. 2 is at 3.324 feet; No. 3 is at 3.535 feet; No. 3 Hager-Moore is at 3,455 feet.

The Kishi Development Co. is rigging to deepen No. 5 McGuire, as is the Sinclair Oil & Gas Co.'s No. 4 Granger. The Supreme Oil Co.'s No. 1 Jackson is at 3,366 feet. The Orange Petroleum Co.'s No. 9 Winifree is shut down at 3,560 feet.

In the Spindletop Pool, the Williams Oil Co.'s No. 1 Gladys will pump at 725 feet. The McKinney Oil Co.'s No. 1 Gladys is drilling at 700 feet.

Hardin County Pools

In the Batson Pool, the Ada Belle Oil Co.'s No. 82 Condon is bailing at 895 feet. The Gulf Production Co.'s No. 158 Wing is a water well.

The Gulf Production Co.'s No. 161 Wing is at 710 feet. The East Batson Oil Co.'s No. 2 Texas is at 800 feet and the Acorn Oil Co.'s No. 51 Paraffin at 486 feet.

In the Saratoga Pool, the Cotton Oil Co.'s No. 5 Gulf will pump at 1,310 feet.

The Gulf Production Co.'s No. 23-BBBC is a derrick. The Sun Oil Co.'s No. 58 T. Co. is at 1,455 feet. Paggi Brothers' No. 6 Lewis is at 655 feet; the Rio Bravo Oil Co.'s No. 3 Bryant is drilling at 1,986 feet. The Regna Oil Co. is starting No. 1 Petty and the Skinner Oil Co. No. 1 Hooks.

Other Pools

In the West Columbia Pool, the Hyde Production Co. abandoned No. 6 McGregor at 665 feet in rock salt. A location has been made for No. 7. The Humble Oil & Refining Co.'s No. 13 Pipkin-Lee is idle at 645 feet.

At Damon Mound, Hamm & Co. has locations for Nos. 2 and 3 Bryan.

At Blue Ridge, the Gulf Co.'s No. 7 Luscher is at 3.655 feet and No. 2 Invincible at 1,980 feet.

In the Big Creek district in Fort Bend County, The Texas Co.'s No. 1 fee is bailing at 3,350 feet. No. 1 Lingua is rigging. The Gulf Co. quit No. 16 Davis at 2,960 feet; same company is starting No. 17 Davis and deepening No. 9 at 4.010 feet. No. 9 Wheat is at 1,865 feet. The Union Sulphur Co. is starting No. 7 fee.

The Texas Exploration Co.'s No. 6 Fitzsimmons at Pierce Junction, which came in after being worked over two weeks ago flowing 3,500 bbls of oil and the same of water and sediment revived and is flowing at the rate of 3,000 bbls. of fluid, 60 per cent sediment and water. the Gulf Production Co.'s No. 11 Taylor, there is working over.

Liberty County

Bad weather that resulted in impassable roads is delaying operations in the new district 3 miles south of Liberty, Liberty County, in the Trinity River bottoms. Mills Bennett has set 200 feet of surface casing in No. 1 Pickett five acres at 200 feet. It is an offset to the flowing well. The Gulf Production, Co. Humble Oil & Refining Co., Monarch Oil & Refining Co.. Bashara and others, Oxford Oil Co., Mrs. Neils Esperson and the Vacuum Oil Co. are all getting in derrick timbers and drilling rigs, but are greatly hampered by the roads into the lowlands.

Wildcat Gas Blowout

The Ridge Oil & Gas Co.'s (C. N. Haskell and others') No. 1 Lee, at Winer Bluff, on the Trinity River, in the northern part of Walker County, staged a terrific gas blowout early in the week and is still blowing. The bit went into the gas sand at 560 feet, drilling in 4 feet. It is being drilled with cable tools and 500 feet of 15½-inch casing has been set. It was blown from the hole. It is on the Lee lease, 14 miles northwest from Huntsville. That section has been the scene of gas blowouts before, but none at such a shallow depth, probably because all previous tests were drilled with the rotary. The Haskell interests have a big block of leases there and have contracted to drill half a dozen tests.

In Brazoria County, the Gulf Production Co. is rigging No. 1 Burns, west of the town of Brazoria, as a formation tests. That section was explored with the seismograph and a salt mass indicated. Hamm & Co.'s No. 1 Bryant at Freeport is setting casing at 3,180 feet. It is an old hole being deepened. The Stratton Ridge Oil Co. is rigging No. 15 Dannebaum.

In Fort Bend County, the Rycade Petroleum Co.'s No. 2 Nash, off the Windom Dome, 5 miles southeast of Damon Mound, is drilling deeper at 2,800 feet. The company is starting No. 1 Meiser, 1,200 feet south from No. 2 Nash. The Gulf Production Co.'s No. 3 Moore, a formation test, is around 615 feet. The Pathfinder Oil Co.'s No. 2 Davis is at 715 feet. It, too, is a formation test. These are drilled with 2-inch pipe by a light rotary, gasoline-driven rig. The Neiland Oil Co.'s No. 1 Frederick is below 1,100 feet.

In Harris County, the Texas Co. is rigging for one deep and one shallow test on the Warren rach at Hockley Dome, 25 miles northwest from Houston. They are on acreage taken over from H. T. Staiti and associates late in the past year.

In Jefferson County, Paggi Brothers are rigging No. 1 Wilson, south of China and the Port Arthur Oil & Development Co. is starting No. 1 West. At Big Hill, the Houston Oil Co.'s No. 1 Pipkin-Sun is at 3,780 feet and No. 5 Staiti at 2,210 feet.

In Liberty County, the Hoffer Oil Co. abandoned No. 1 Barbee at 2,560 feet. The Texas Co.'s No. 2 fee is drilling at 1,543 feet.

The Texas Co. is starting a formation test on the Northup-Russell prospect, south of Nome in Hardin County. Both the Humble and Gulf companies have acquired leases in that vicinity. The area has a number of strong sulphur water wells at about 100 feet deep, which have been isolated by good water wells within a radius of 1 mile.

Both the Gulf and Humble companies have been leasing east of Green Bayou, 14 miles east of Houston in territory on which the seismograph has been tried out. George Hindman's No. 1 Collier on the east side of Barber Dome in Chambers County, is around 1,100 feet. It is reported the Gulf Co. has joined in this test.

In the Markham district in Matagorda County, the Rycade Petroleum Co.'s No. 1 Gray is deepening at 3,275 feet and No. 2 Gray is sidetracking at 2,070 feet. The Marland Oil Co. has a deep test on the Murphy land, which is drilling around 4,655 feet. The Shepherd Mound

(Continued on Page 238)

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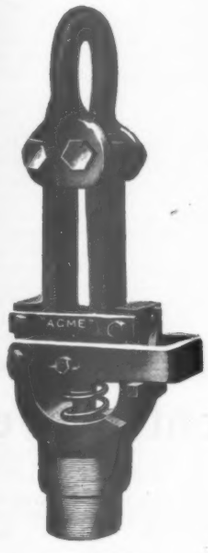

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Kentucky—Tennessee

By Vern T. Whitney

Tinsley's Bottom well in Clay County stimulating activity in northern Tennessee counties. Garrison & Townsend get 37-bbl. producer in north extension of Martha area, North Weir district; Kentucky-Counties Oil Co. 15 bbls. in South Weir Field. Greensburg wildcat test and gas area attracting interest.

BOWLING GREEN, Ky., Jan. 26.—It appears that Clay, Pickett, Overton, Fentress, Jackson and Macon counties in the northern portion of Tennessee are in for a big play in the very near future, as acreage is being taken in all sections of them by major companies as well as by smaller concerns and independent operators. The new interest was aroused by the recent completion of Dafoe and others on the Hamp Lynn farm at Tinsley's Bottom in the extreme south central part of Clay County and 18 miles southwest of the development at Kettle Creek in Cumberland County, Kentucky.

No. 1 Hamp Lynn, completed October 8, is pumping 40 bbls. daily from a total depth of 438 feet, 113 feet below the Pencil Cave in the Modoc sand. No. 2, finished November 12, started off with a flush estimated better than 1,000 bbls. from the top of the Modoc sand at 429 feet, 104 feet below the Pencil Cave. This well is being flowed at the rate of 100 bbls. per day, which could be increased materially if it was opened up. At present eighteen 250-bbl. tanks are full of crude produced from Nos. 1 and 2 and more storage is being erected. Dafoe and his associates are nearing the pay in No. 1 Draper one-half mile southeast of the Lynn wells and have erected two 250-bbl. tanks to take care of the expected flow. The greatest drawback at this time is that there is no pipe line in the field to take care of the production and it keeps the operators busy building tankage to take care of wells already drilled as they dare not shut them in for any length of time.

It is reported that both the Paragon Development Co., of Toledo, Ohio, and the Gillespie Oil Corp. of Gallatin, Tenn., are planning to enter the field and build gathering lines. The Paragon would have to extend its line from Kettle Creek, 18 miles away, while the Gillespie Oil Corp. would no doubt lay a line to the country south of Celina, 10 miles distant, to a location on the Cumberland River near Gainesboro, from which it can load barges and thus have all the year round river transportation.

The Toledo-Chicago Oil Co. recently organized by Lyman C. Scott of Toledo, Ohio, has let contracts for the drilling of six wildcat tests on its acreage in Clay, Overton and Jackson counties and will start its first in April. The Oil Fork Development Co. has made a location in Jackson County across Cumberland River from Tinsley's Bottom and will spud in shortly. This concern holds a large amount of valuable acreage in Cumberland County, Kentucky.

At Celina, county seat of Clay, two wells are reported drilling; one on the Stover tract and the other on the Spain place. Nothing is being done at present in the vicinity of Willow Grove, where a gusher was completed a year and a half ago on the Marcum farm at a shallow depth.

In Overton County, W. H. Boswell's test at Mitchell Creek was drilling at an unknown depth.

Other Tennessee News

The Rinehart Oil Corp. of Kansas City, Mo., has moved a rotary rig to the Holt farm, 4 miles northwest of Trenton, near Dyer in Gibson County, Tennessee, and will carry the hole down to a depth of 3,500 feet if necessary. This is the test reported to have been good for 500 bbls. last September at a depth of 1,490 feet, which proved false when investigated. The hole was drilled to the latter depth by the Dyer Oil & Gas Co.

In Sumner County, the E. A. Oliver Syndicates' No. 1 test, 2½ miles southeast of Tyree Springs is reported dry and abandoned. Dr. T. A. Sims, of Shreveport, La., is drilling No. 2 on the Steward-Terrell farm, 1 mile south of Tyree Springs and 12 miles west of Gallatin. No. 1 on this tract, drilled high on structure, was good for 2,000,000 feet of gas at 153 feet, 73 feet below the Chattanooga shale. A slight showing of oil was also had at this depth.

According to reports, the natives of Dechered in Franklin County have subscribed $75,000 to be used in drilling a well in search of oil in the vicinity. The location, according to the report, was made by a "doodle bug" head phone and copper rod.

Near the town of Trimble in Ohio County, Richards & Miller are drilling a test on the M. A. Gauldin farm at an unknown depth. The Continental Oil Co. has a rig on No. 2 location on the Jodie Howard farm, 2 miles northwest of Jackson in Madison County. The Spring Valley Oil & Gas Co.'s No. 1 Brown Sane farm at Bolivar in Hardeman County was shut down at 1,500 feet.

Strickland & Co.'s No. 1 Joe Perry, near Lacona, in Fayette County is a rig; in Benton County, the Benton Oil & Gas Co.'s test near Clarkesville was shut down at 800 feet; in the same county unknown parties were spudding in a test near Camden.

In Hamilton County, the Dryden Oil Co. has a rig over its No. 1 location near the Hamlet of Daisy. In Murray County, Doctor Doren's No. 1 McClannigan was shut down at 2,450 feet.

Operators in Tennessee will be glad to know that the State Geological Department will ask the legislature this coming term for a bill providing for heavy fines for failure to plug salt water horizons. This bill is intended to protect the real oil man and penalize the homeguard and amateur driller.

Kentucky News

A summary of the week's work for the whole of Kentucky shows the following: Eighteen completions, with an initial yield of 114 bbls. from 11 producers, 5 dry holes and 2 gassers. Compared with the preceding week, this is a decrease of 4 completions, 8 producers, 1 gasser and 232 bbls. in production. Three more dry holes were listed. The wells were distributed by counties as follows:

County—	Comp.	Wells	Prod. Prod.	Dry	Gas
Johnson-Magoffin ..	3	2	30	1	0
Barren	3	3	23	0	0
Allen	3	1	10	2	0
Lawrence-Johnson ..	3	3	41	0	0
Rowan	2	0	0	0	2
Wayne	2	1	5	1	0
Warren	1	0	0	1	0
Owensboro district .	1	1	5	0	0
Cumberland	1	1	10	0	0
Total	18	11	114	5	2
Last week	22	10	346	2	1
Difference	4	2	232	3	1

Western Division

A wildcat operation being watched is that of W. K. (Pinky) White and son of Hollywood, Cal., on the Woolridge farm, 5 miles northwest of Greensburg on the bank of Green River, in Green County. Very little oil development has gone forward in this county as most of the holes were drilled in search of gas. However, a few miles southwest of Greensburg oil testing 46 gravity was found in small quantities on what was decided by geologists to be a syncline. Three miles northeast of Greensuburg, along the banks of the Green River and Pitman Creek, there is an exposure which shows a well defined structure of great breadth and width, according to geologists, and it is upon this structure that the Whites are drilling their test.

Gas Area

The gas field in this area is about 20 miles long and 4 miles wide, running northeast and southwest of Greensburg, in Green County and fading out at a point near the town of Saloma, in Taylor County. The gas is found at depths ranging from 150 to 350 feet, the difference in depth owing to the surface elevation. The field is five years old and the gas is found in the Corniferous lime after passing through about 40 feet of black shale. There is from 18 to 20 feet of cap rock and the gas is encountered at about the bottom of the first screw and then about two screws in where 15 feet of gray porous lime is had. The wells average in volume from 1,000,000 to 4,000,000 feet per day with a rock pressure of 40 pounds. The town of Greensburg is heated and lighted in the old fashioned way, there being a flat rate for stores and dwellings, so naturally when it becomes too hot instead of turning down the gas the natives open the doors and cool off.

G. B. Taylor, the oldest gas operator in Green-Taylor County Field, who has kept two machines busy for the past five years, thinks that some one is going to open up an oil pool in the vicinity of Greensburg that will create an old fashioned oil stampede. He says, "There must be a pool of polls of oil somewhere in the vicinity of this tremendous gas field." At present Mr. Taylor is furnishing gas for the Green River Carbon Plant and has in the neighborhood of 7,000,000 feet shut in ready for the market.

The Natural Gas Product Co. at Whitewood, 5 miles northeast of Greensburg, in Green County, is making 1,200 bbls. of carbon black every 24 hours, using approximately 9,000,000 feet of gas supplied from gas wells in Green and Taylor counties belonging to the Tampico Gas Co.

The Green River Carbon Co., 1 mile south of Greensburg, a much smaller plant than that of the Natural Gas Product Co., is using 1,000,000 feet of gas which is supplied by G. B. Taylor.

Barren County News

Development work in Barren County is just getting back to normal as operators who left for their Christmas holidays return. During the past week only three wells were finished, all making

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Fields of the Central West

By Whit

FINDLAY, Ohio, Jan. 26.—There are very few new wells starting in the Central West Field. The Central Ohio Field holds its own due to the gas people keeping up their efforts to secure a substantial supply. In the hunt for natural gas several deep sand pools have been found in Holmes, Wayne, Licking, Fairfield, Ashland and other counties like Athens, Hocking, Perry and others are developing some fair sized oil wells.

Very little is doing in either Indiana or Illinois and work is not expected to start until the spring rainy season is over, then a certain amount of wildcat work will be done in both States as well as drilling in defined territory. The Lima Field is also quiet at this time and a revival is not looked for until April or May.

In the old Lima Field of northwestern Ohio but eight new completions were recorded for the week, of which one was dry, one gas, the other six showing a flush of but 76 bbls.

In Plain Township, Wood County, Ladd & Morrison's No. 3, located 1,625 feet from the south line and 375 feet from the east line of the Joe Lane, Section 33, pumped 3 bbls. at 1,355 feet. This is between Bowling Green and Milton.

In Eagle Township, Hancock County, Dave Kirk, Jr., and others' No. 13, located 600 feet from the north and west lines of the E. Gorby farm, Section 7, pumped 5 bbls.

Auglaize County

Auglaize County is making a very fair showing, especially in the Wapokonetta Pool in Moulton Township, a new extension to the old field. In this township, the Fowler Brothers Petroleum Co.'s No. 3, located 500 feet from the south line and 250 feet from the east line of the G. R. Julian farm, Section 34, and a few miles west of Wapakonetta, is credited with 15 bbls. Cliff Blair and others' second test in the northeast corner of the Mary Tester farm, Section 24, is also credited with a production of 15 bbls. In Douchouquet Township, same county, and in the Criderville Field, the Fowler Brothers Petroleum Co.'s No. 1, on the northeast corner of the Fred Presser, in the northeast quarter of Section 29, pumped 28 bbls.

In Gibson Township, Mercer County, the Central West Oil & Gas Co.'s No. 5, located 200 feet from the south line and 700 feet from the west line of the Peter J. Schmidts, Section 36, pumped 10 bbls. Top of Trenton found at 1,203 feet and drilled 5 feet in to a total depth of 1,248 feet.

J. H. Harmon and others of Mansfield, Ohio, have started a test well on the A. J. Sulley farm, Section 5, Willshore Township, Van Wert County, on the edge of the village of Wren. This concern drilled in a test on the E. L. Sheets farm, Section 7, same township, close to 2 miles southwest of the new well which had a fair showing of oil at 1,220 feet, but was plugged and abandoned.

Payne Field

Paulding County is showing some prolific gas wells of late and there appears to be sufficient to supply Payne, Paulding, Antwerp and some other towns of the county, but Payne comes first, being nearer the field. The newest gas producer is that drilled by H. H. Cuppler, Ledford, Robinson and others on the John Finan farm, southwest quarter Section 17, Benton Township, in the northeast corner of the lease, about 2½ miles south and 1 mile west of Payne. The top of the Trenton in this well was found at 1,354½ feet, the highest the Trenton has been encountered in any of the late wells drilled in the field. The owners were after natural gas and stopped the well at 35 feet in the sand, where slight indications of oil were shown. The gas was found at 10 feet in the sand and continued on down to the depth given. The well was shot with 40 quarts by Shooter Cunningham and the well cleaned out and a packer

(Continued on Page 222)

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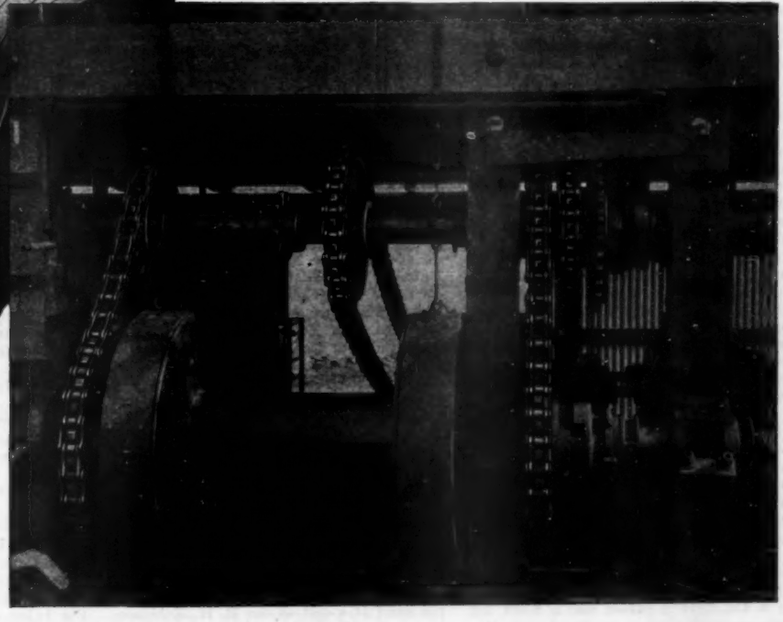

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Pennsylvania-West Virginia

By D. S. Wakenight

Murray City Oil & Gas Co. gets 106-bbl. well in Ward Township, Hocking County, Ohio. Karns & Co. and Snyder Oil Co. have 25-bbl. well in Hopewell Township, Licking County. W. W. & A. T. Wehrle's second Trenton Rock producer in Newark Township, Licking County, reported over 20 bbls.

PITTSBURGH, Pa., Jan. 26.—Operations in the eastern fields slowed down during the past week, as the rain and sleet put the fields under a coat of ice. Many minor casualties were reported from various sections. Southeastern Ohio continues to hold the lead in completions better than the average size. In the deep sand territory in the southwest quarter of Section 6, Ward Township, Hocking County, the Murray City Oil & Gas Co. completed and shot in the Clinton sand No. 4 on the N. M. Aker heirs' farm. The well produced 106 bbls. the first 24 hours. The location is 700 feet south of the first test on the same farm. In Section 1, Hopewell Township, Licking County, Karns & Co. and the Snyder Oil Co. completed and shot a test on the M. A. Skinner farm. It produced 25 bbls. the ensuing 24 hours.

In the northeast quarter of Section 21, Washington Township, Hocking County, the Gordon Oil Co. drilled No. 5 on the Henry N. Ford farm through the Clinton sand, developing a very light show of oil in that formation. The location is 800 feet north of No. 3 and if it makes a producer it will be a very light pumper.

Duster in Holmes County

In Lot 8, Monroe Township, Holmes County, the East Ohio Gas Co. drilled a second test on the M. G. Bird farm through the Clinton sand. Nothing but a little gas was found at this location and when they gave it a shot the casing collapsed and it will probably be abandoned. This well is one location north of the first test. In Lot 10, same township, the same company completed No. 3 on the Charles Shank farm. It is a gasser good for 250,000 feet in the Clinton sand.

Trenton Rock Completion

In Newark Township, near Newark, Licking County, W. W. and A. T. Wehrle have completed a second Trenton Rock test on their own farm. The owners have not volunteered any information as to its productivity, further than it is a better well than the Pure Oil Co.'s test on the Ilena Smith farm, which is producing 20 bbls. a day. Interest in the Trenton Rock as a producing formation in the vicinity of Newark has greatly subsided. The cost to drill to a depth of more than 4,000 feet for small producers does not appeal to the conservative operator. In Lot 2, Franklin Township, Ralph Brothers, Inc., drilled No. 6 on the Gideon S. Smith farm through the Berea grit and good for 9 or 10 bbls. a day.

Shallow Sand Territory

Morgan County continues to furnish the best shallow sand producers. In Section 21, York Township, the Sun Oil Co.'s second test on the Amos Souders farm is good for 15 bbls. a day in the Berea grit. In the same district, the Pure Oil Co. got a 35-bbl. producer when it completed and shot No. 2 on the Christman farm. In Liberty Township, Washington County, in Section 11, Dennis & Co. have a gasser and a 5-bbl. oil producer at their test on the Jennie McAtee farm. In Section 22, Ludlow Township, E. L. Yager, trustee, completed in the second Cow Run sand a test on the Retta Johnson farm. It is a natural producer good for 10 bbls. a day.

Drilling Test Wells

In Union Township, Muskingum County, local parties are down 1,000 feet at a test on the O. C. Evans farm. In the same county and township, same parties have skidded the rig and starting a new hole on the J. S. Evans farm. In the northwest quarter of Section 23, Reading Township, Perry County, Reagan & Co. have moved the rig and started to drill a Clinton sand test on the St. Joseph Literary Society's property. The first test came in a gasser in the Berea grit and the second test is 100 feet west of the first. In Section 22, Richland Township, Fairfield County, the Rush Creek Oil & Gas Co. has started a second test on the Folk heirs' farm. In Section 26, Ward Township, Hocking County, the Arkansas Fuel Oil Co. is drilling a second test on the Nelson H. France farm.

Perry County

In Section 2, Madison Township, Perry County, the Atha Oil Co. has drilled a test on the C. E. Wilkins farm through the Clinton sand and dry. This location is about 1 mile northeast of the same company's No. 4 on the Melick Brothers' farm. In Section 22, Perry Township, Licking County, the Carter Oil Co. completed No. 3 on the O. E. Romine farm, showing for a very light pumper. This location is 600 feet north of the first test in this farm. In Section 22, Richland Township, Fairfield County, Sturm and others have started to drill a test on the Harry Crist farm, 800 feet southwest of the same company's test on the H. E. Morrow farm. H. E. Tuttle and others have completed in the Berea grit a test on the I. C. Wilcox farm, in Jackson Township, Section 2, Noble County. It shows a little gas but no oil. In Liberty Township, Washington County, William Huntsman & Co. started to drill a second test on the Erbs farm, 800 feet south of the Dutch Oil Co.'s No. 14 on the Christ Oliver farm.

West Virginia

Light producers and quite a number of gassers were the late offering in the West Virginia fields. On Mud Fork of Poca River, Smithfield district, Roane County, 100 feet east of the McElly Oil & Gas Co.'s well on the Newburn School lot, the United Fuel Gas Co. has drilled a test on the J. W. Epling farm through the Big Injun sand showing for a 20-bbl. producer. On Yellow Creek, Center district, Calhoun County, Park Bowser has drilled a test on the W. F. Richards farm through the Berea grit. It is 300 feet northeast of the test on the R. M. Ramsburg farm and good for 3 bbls. a day. In Walton district, the United Fuel Gas Co. has a gasser in the Big Injun sand at a test on the L. M. Kelley farm. On Little Creek, Spencer district, the South Penn Oil Co. completed in the Big Injun sand No. 19 on the W. S. Craig farm good for 4 or 5 bbls. a day.

On Talkington Fork, McClelland district, Doddridge County, the Hope Natural Gas Co. has a gasser in the Big Injun sand at a test on the R. H. Robinson farm. In Greenbrier district, Trainer & Travis have a 10-bbl. pumper in the same formation at a test on the Ananias Davis farm. On Middle Island Creek, in the same district, the Gulf Oil & Gas Co.'s test on the Able Hinkle farm is dry in all formations, including the Speechley sand, will make a light gasser in the Gordon stray sand. In Center district, Wetzel County, the Hope Natural Gas Co. has a gasser in the Gordon sand at a test on the Jeff Miller farm. In Church district, the Maple Pitt Fuel Gas Co.'s second test on the J. T. Stewart farm is a gasser in the Maxon sand.

Ritchie County Still Leads

In new work completed and new work starting, Ritchie County leads all others. In Murphy district, the Spruce Oil & Gas Co.'s test on the T. M. Summers farm is a Big Injun sand gasser. In the same district, Beckerstaff & Co. have a gasser in the same formation at a test on the E. C. Frederick farm. In the same district, the Hope Construction and Refining Co. has a light pumper in the Maxon sand at a test on the R. W. Goff farm. They have been bailing 3 bbls. a day for the past week. In the same district, the Hope Natural Gas Co. has a duster in the Berea grit at a test on the Mary P. Bartlett farm. In Cove district, Doddridge County, Vanhorn & Stoutt have a duster in the Gordon sand at a test on the Conley heirs' farm. On Black Lick Run, New Milton district, Doddridge County, the Hick Oil & Gas Co.'s test on the Hick Davis farm is a 5-bbl. pumper in the Big Injun sand. On Indian Creek, Murphy district, Ritchie County, J. F. Deem & Co. have a duster in the salt sand at No. 4 on the C. J. Williamson farm. In Union district, Lee Prunty & Co. have completed a Big Injun gasser in the Big Injun sand at a test on the Lee Prunty farm.

Drilling Old Wells Deeper

In Clay district, Monongalia County, the Dunn Mar Oil & Gas Co. started at 2,762 feet to drill down No. 5 on the Minor Tennant farm. In the same district, the South Penn Oil Co. is drilling from the Big Injun sand old No. 3 on the Malinda Tennant farm. The Fisher Oil Co.'s No. 3 on the S. L. Perrine farm, in Union district, Harrison County, drilled to a total depth of 2,990 feet, is dry in all sands.

Small Pumper in Clay County

For the first time in a number of months a well has been completed in Clay County. It is the Chalmers Oil & Gas Co.'s No. 10 on the C. P. Samples farm, located in Union district and good for 10 bbls. a day in the Big Injun sand. In the Plum Run Field, Williams district, Wood County, O. E. Grows No. 6 on the Tim McAtee farm is showing for a 5-bbl. pumper in the first Cow Run sand. At Metz, Mannington district, Marion County, A. S. Monroe & Co. have a gasser in the Gordon sand at a test on the A. M. Rowand farm. Wasmuth & Kallehan's second test on the Riley heirs' farm in Union district, Marshall County, is good for 10 bbls. a day in the Big Injun sand.

Lower Southwest

On Elk River, Big Sandy district, Kanawha County, the Elk Refining Co.'s No. 3 on the Goshorn heirs' tract and No. 2 on its own property, are gassers in the Big Injun sand and a show of oil in the Weir sand. The Columbia Gas Co.'s test on the William Bean farm, in Carrol district, Lincoln County, is a gasser in the Big Injun sand. In Union district, the Foote Oil & Gas Co. is testing for gas in the salt sand on the J. W. Peck farm.

In Clay district, Ritchie County, the Pittsburgh & West Virginia Gas Co. drilled its test on the Dollie M. Freeland farm to a total depth of 2,630 feet. No Squaw, Berea grit or Gordon sand was found in this test. A light gas pressure was developed in the Big Injun sand, but scarcely enough to connect it up. In Grant district, Elder & Co. are now through the Squaw sand on the J. H. Nichols farm. It is dry in this and all upper sands and has been abandoned. In Murphy district, the Beren Oil Co.'s old well on the Lawson Brothers' farm drilled down to the Big Injun sand, is dry and abandoned. In Union district, Pleasants County, Howard Hall's old No. 1 on the Harry Pryor farm drilled down to the Keener sand, is dry and abandoned. A light show of oil was developed in the Maxon sand. In Central district, Doddridge County, Roy Shinn has put in pumping his test on the H. Shinn farm. It is producing 12 bbls. a day. In the same district, the Mud Lick Oil & Gas Co.'s second test on the Mary Bee farm is a 2-bbl. pumper in the Maxon sand. In Glennville district, Gilmer County, Campbell & Co. have a Maxon sand gasser on the J. S. Taylor farm.

Gasser in Wayne County

On the waters of West Fork of Twelve Pole Creek, in Butler district, Wayne County, and 2 miles south of Wayne post office, the Chartiers Oil Co. completed a wildcat on the H. S. Johnson farm. Nothing was found in the Berea grit but it is good for 800,000 feet of gas in the Big Lime formation. On Charley's Creek, Grant district, Cabell County, the Midway City Gas Co.'s test on the J. M. Johnson farm is completed and shot in the Berea grit. It is a gasser good for 150,000 feet. In the same district, on Indian Fork, the Walton Oil & Gas Co. started to drill a test on the Benjamin Walton farm. In Elk district, Kanawha County, the Weona Oil Co. has a light gasser in the Big Injun sand at a test on the R. E. Williamson farm.

Starting Test Wells

Despite weather conditions there is considerable test work starting in the old district. In Troy district, Gilmer County, the Carter Oil Co. is hauling rig timbers to a location on the Icy M. Wilcox farm. In Granville district, the Star Oil & Gas Co. is rigging up on the Charles Luzader farm. In DeKalb district, the Hope Natural Gas Co. is rigging up on the F. M. Beall farm. In Center district, the Ohio Fuel Oil Co. has a hole at 1,500 feet on the A. M. Coberly farm. In the same district, the Valley Oil Co.'s test on the J. B. James farm is showing for a gasser in the Maxon sand. In the same district, Okey Beall & Co. have a show of oil and gas in the Big Injun sand at a second test on the W. A. Simmons farm.

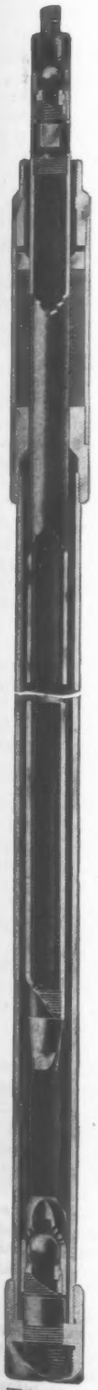
Doddridge County

In West Union district, Doddridge County, the Murphy Oil & Gas Co. is hauling timbers to a location on the Wilmer Robins farm. In Cove district, the Philadelphia Oil Co. is building a rig on the William Flesher farm. In McClelland district, the Carter Oil Co. started to drill on the Thornton Weekly farm. In Mannington district, Marion County, the Buffalo Oil Co. is running the 8¼-inch casing at a test on the Beaty heirs' farm. In Simpson district, Harrison County, the Aizpurin Gas Co. started to drill on the Nathan Richards farm. In Spencer district, Roane County, the same company is rigging up on the Craig-Bartlett farm. In Geary district, the Elkins Oil & Gas Co. is rigging up on the J. M. Keene farm. This is a second test for this farm. The Manufacturers Light & Heat Co. is rigging up on the R. A. Hirtenbaugh farm, in Church district, Wetzel County. In Liberty district, Marshall County, the Carnegie Natural Gas Co. is cleaning out to drill deeper in its No. 2 on the L. E. Conaway farm. In Washington district, the Myers Gas Co. is drilling on the C. N. Ramsey farm in the Curry district, Putnam County. The Star Gas Co. has started to drill on the H. C. Osborne farm. In Carroll district, Lincoln County, L. R. Sweetland is starting a second test on his own farm. In McCoam district, Cabell County, the Star Producing Co. is due in the Big Injun sand on the Walter E. Swann farm.

The fourth sand development in North

(Continued on Page 228)

Self-packing working barrel



"Tex"

Trade Mark
Reg. U. S. Pat. Off.

This working barrel solves the modern oil well pumping problem. A REAL money saver for those who want to cut operating costs down to the very bone. Has no cups. Does not cut oil. Self-packing. Pumps floating sand. Eliminates frequent rod pulling. Large capacity. Sturdy construction. Up-to-date in every respect.

What Users Say About It:

Ardmore, Oklahoma. *"We have had no trouble with cut oil from this Barrel, and no trouble of any kind."*

Augusta, Kansas. *"The Tex Barrel is giving us real service so far."*

Humble, Texas. *"The Barrel has been pumping six weeks without trouble. Previously we were forced to pull once or twice a week."*

Wichita Falls, Texas. *"So far this Barrel works like a charm, and our trouble with cut oil is no more."*

Tonkawa, Oklahoma. *"The Tex Barrel has been giving perfect satisfaction."*

Smackover, Arkansas. *"The Tex Barrel was installed on April 12th, and to date (May 10th) has given very satisfactory service."*

Wilson, Oklahoma. *"I am glad to report that the Barrel is performing wonderfully."*

Drumright, Oklahoma. *"We have had no trouble with the Barrel since it was installed."*

Full Information on Request

MANUFACTURED SOLELY BY

BRADFORD MOTOR WORKS,

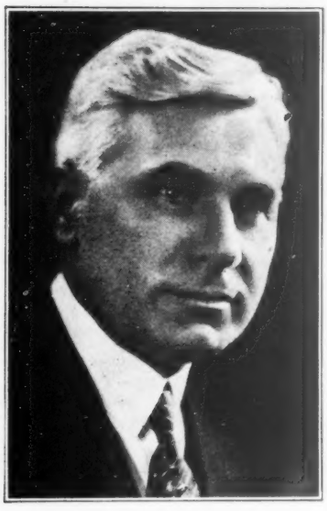
BRADFORD, PENNSYLVANIA

Branch Factory and Warehouse: TULSA, OKLAHOMA

With Screw Type Lower Valve

With Garbutt Rod

MEN KNOWN IN OILDOM



Edward J. Bullock

The genial and popular Edward J. Bullock, Director of Purchases and a member of the Board of Directors of the Standard Oil Company (Indiana), began his career as an office boy in the company's office at Milwaukee, Wis., in 1889. Today, he supervises the expenditures of many millions of dollars annually for his company. Mr. Bullock has been a hard worker all his life. As a boy, he walked 4 miles to his work and had to be there by 7 o'clock. His quitting hour was when the day's work was done, which was generally late in the evening.

Mr. Bullock was born in the rolling mill district of Cleveland, Ohio, in September, 1873, and his early days among the hard working classes taught him the necessity of earnestness and application to his job. He was transferred to the Chicago office in 1904, as assistant manager of the lubricating oil sales department, and two years later was promoted to the position of manager in that department. In 1915, he became manager of all sales for the Chicago division.

The petroleum products purchasing department of the Indiana company was organized in 1919, and he was made manager. Then, in 1921, he was made director of all purchases, and these run into hundreds of millions annually, and are made under his supervision. In 1922, Mr. Bullock was elected to the Board of Directors. Mr. Bullock's success and achievement is the story of an American boy who, by hard work and application to his job, has climbed to the top round of the ladder of success. Mr. Bullock's home is in Oak Park, Ill., where, with his splendid family, he is prominent in civic and social affairs.

PERSONAL PARAGRAPHS

John D. Hull, of Tulsa, Okla., was in the Winfield, Kans., Pool visiting the J. A. Hull oil interests.

* * *

John Williams, of the Black, Sivalls & Bryson Tank Company, was in Winfield, Kans., on business.

* * *

Tom C. Mulloy, of Salina, Kans., has returned to Salina after a business trip to Cowley County oil fields.

* * *

L. W. Cogswell, of Tulsa, is now located in Winfield, Kans., as manager for the Producers Lumber Company.

* * *

The Mountain Iron Supply Company has secured a location in Winfield, Kans., and expects to have a store opened in the next 30 days.

Edward L. Doheny passed through El Paso en route to San Antonio, from which point he will go to Mexico to inspect holdings in that country.

* * *

Karl Metcalfe of Imperial Oil, Ltd., Sarnia, Ont., has left for Barranca-Bermeja, Colombia, where he will be engaged with the International Petroleum Co.

* * *

Clyde Walker of the Bartlesville Supply Company of St. Louis, was in Tulsa and other points in the Mid-Continent during the past week on a business trip.

* * *

James McCue, for several years connected with the transportation department of the Standard Oil Co., of California, has returned to his home in Washington, Pa.

* * *

Otto Dittmer, of the Lee C. Moore Derrick Company, left Tulsa a few days ago for California, where he will spend several months on business for his company.

* * *

B. L. Majewski, manager of the distributing divisions of the Shaffer Oil & Refining Company, was in Tulsa several days last week from the Chicago offices of the company.

* * *

Mr. and Mrs. G. W. Currie of Petrolia, Ont., have left via New York, for Peru, where Mr. Currie is employed by the International Petroleum Co. Mr. and Mrs. George Bennett of Petrolia have also left for Peru.

* * *

Walter C. Hill, formerly connected with the Lee C. Moore Co.'s Casper, Wyo., office, spent a week there recently on business. Mr. Hill is now Rocky Mountain representative for the company, with headquarters in Denver.

* * *

Rufus C. Dawes has been visiting Shreveport, La., and Beaumont, Tex., on an inspection trip of the property of the Pure Oil Co., of which he is a stockholder, and the Southwestern Gas & Electric Co., of which he is president.

* * *

P. F. Shannon, formerly division superintendent for the Mutual Oil Company, has been chosen professor in the Petroleum Engineering Department at the Colorado School of Mines and assumed his new duties the first of December.

* * *

Erle P. Halliburton, head of the Halliburton Oil Well Cementing Company, of Duncan, Okla., has returned to Oklahoma from California where he recently was victorious in a legal case involving patents for oil well cementing.

* * *

W. L. Taylor of Smethport, Pa., an oil operator in the Pennsylvania fields is in San Antonio, Tex., and will spend a month or two looking over the oil situation. He and Allen Park were coworkers in the Pennsylvania fields some years ago.

* * *

W. F. Funk, manager for the Carter Oil Co.'s interests in Wyoming and Colorado, is spending a few days in Pittsburgh, Pa. Mr. Funk expressed the opinion that both States would at some time in the future, become very large producers of oil.

* * *

John A. Wilbert, Chicago marketer, has opened offices in the Tower Building at the corner of Madison Street and Michigan Avenue, where he will do a general marketing business. Mr. Wilbert was formerly with the Midland Petroleum Company and for a number of years with the Acme Petroleum Company, in charge of its light oil division.

* * *

Dr. Roy A. Wilson, associate professor of geology in the University of Montana, has accepted a position with the same rank in the University of Oklahoma School of Geology, taking the place of Associate Professor G. E. Anderson, who left January 1 to complete his doctor's degree in the University of Chicago.

* * *

A party composed of John A. Bell, Jr., president of the Interstate Pipe Company, of Pittsburgh, Pa.; M. Thomas, distrct manager of that firm, of Tulsa; C. A. Redding, of the Lee C. Moore Derrick Company, and C. H. Curray, were in the Winfield, Kans., oil fields on a business and visiting tour.

L. S. Allen, formerly with the Sizer Steel Corporation of Buffalo, recently became Mid-Continent representative of the United Alloy Steel Corporation, with headquarters at 309 West First Street, Tulsa.

* * *

Lining up his forces to make 1925 the greatest sales year in the 40 years' history of the company, C. W. Ralph, director of sales and transportation, Union Oil Co. of California, has made important changes in the marketing personnel of the organization.

* * *

Levi Smith, active head of the Big Lake Oil Co. has just returned from Pittsburgh, Pa., and other eastern points. After a few days spent at the Fort Worth office of the Transcontinental Oil Co. he will go on to Reagan County, where the Big Lake Co. is carrying on very extensive operations.

* * *

R. C. Holmes of New York, vice president in charge of refineries for The Texas Company, was in Casper, Wyo., recently. While Mr. Holmes was called there by business, his visit also partook of a social nature, as he is a brother of Earl D. Holmes, a prominent business man of Casper.

* * *

Thomas J. Wright of Oil City, Pa., one of the best known oil producers of the northwestern Pennsylvania fields, and Miss Ella Morland of Titusville, Pa., were married at the Episcopal Church at Titusville on January 15 by the rector, Rev. Albert Broadhurst. They will make their home at Titusville.

* * *

M. R. Bree, formerly with the Larkin Packer Company, recently joined the sales force of the B. & A. Specialty Company of Tulsa. That company is the factory representative of the Bartlesville Supply Company's products and carries a complete stock of the products at the Tulsa headquarters.

* * *

Leon A. Tarbox, who is in charge of the experimental laboratories of the Independent, Emlenton and Ohio Valley refineries, and Miss Virginia E. Poole, of Johnstown, Pa., were married at the home of the bride's parents recently. They will make their home in Oil City, Pa.

* * *

J. D. Reynard, publicity and advertising man for the Empire Gas & Fuel Company, out of Bartlesville, Okla., was in Wichita, Kans., recently on business. Mr. Reynard came to the Empire Gas & Fuel Company a few months ago from the Northern Texas Traction Company of Fort Worth, Tex.

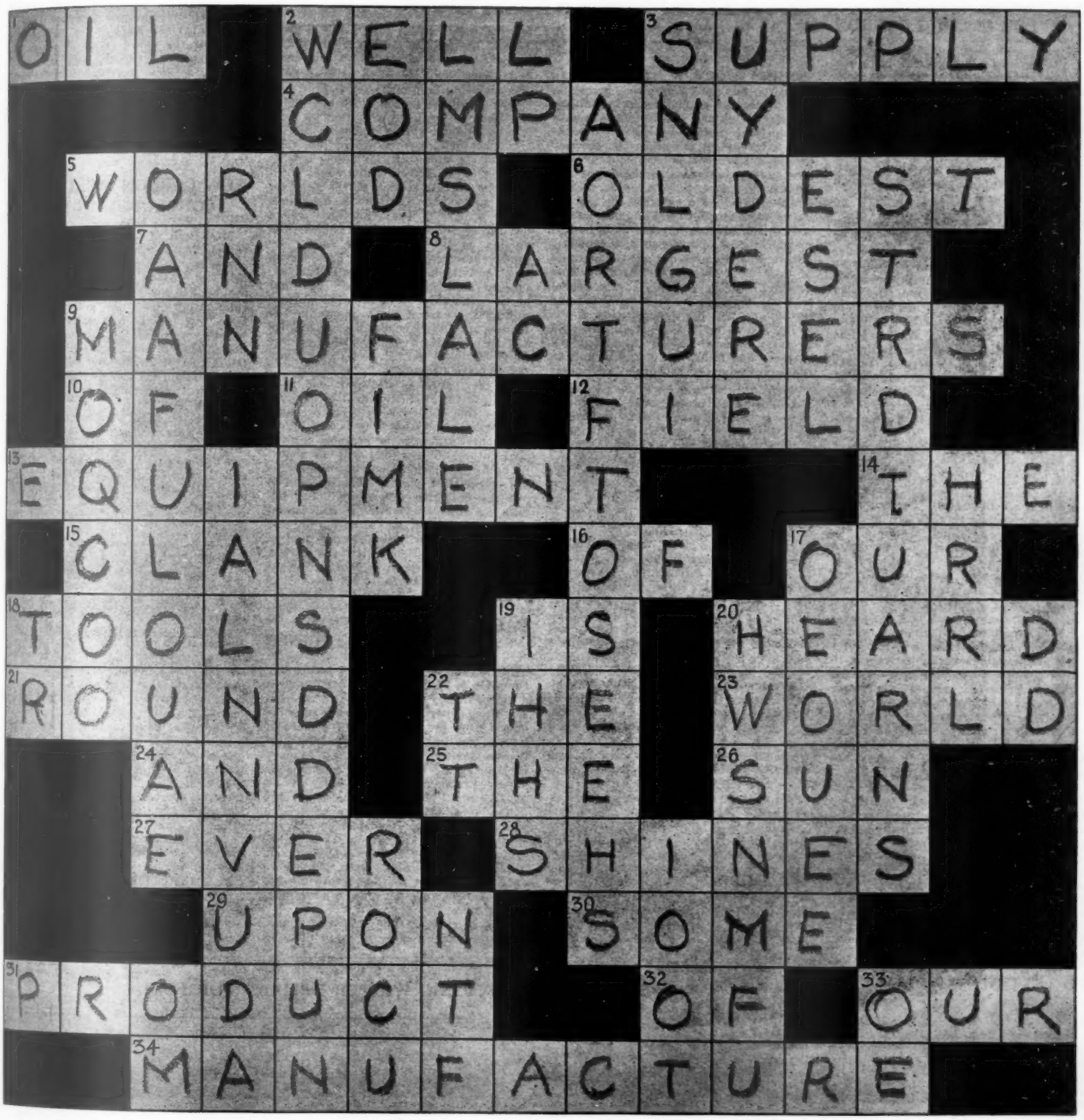
* * *

H. H. James, formerly with the Sherwin-Williams Company, and now sales engineer for E. I. duPont de Nemours & Company, has opened headquarters in Tulsa for the sale of paints manufactured by the duPont Company. This is the first time the concern has entered the oil trade paint business, it having, during the past two years, conducted extensive research work and now being ready to sell paints for preserving the surface and preventing corrosion for oil tanks, tank cars and all oil field equipment. E. G. Johnson has opened headquarters in Dallas, Tex., for the same company.

* * *

J. M. Geary, formerly manager of refined oil sales, is appointed sales manager, with supervision over all sales of the company. E. S. Sharp, formerly district sales manager, Los Angeles district, is appointed manager of stations. Mr. Sharp's duties will include supervision of all properties and equipment of sales department and all department matters, excepting those concerning actual sales. L. M. Bridgman, formerly district sales manager, Seattle, is appointed manager of refined oil sales, the post vacated by Mr. Geary. Other changes include the appointment of H. F. Warner to district sales manager, Seattle; E. W. Brewster to district sales manager, Phoenix; J. P. Osborne, to assistant district sales manager, Phoenix; W. L. Matlock, to district sales manager, Los Angeles; M. W. McAfee to district sales manager, Fresno; F. W. Nevitt, to acting assistant district sales manager, Fresno; E. J. Munn, to assistant district sales manager, Los Angeles; C. A. Shipkey, to special agent, Santa Barbara, and R. W. Martin to assistant to director of sales and transportation, Los Angeles.

THIS 34 HORIZONTAL-WORD PUZZLE TELLS THE STORY OF 62 YEARS



1. LUBRICANT
2. A SPRING OR FOUNTAIN
3. TO FURNISH
4. FIRM OR CORPORATION
5. GLOBE—POSSESSIVE
6. ELDEST
7. CONJUNCTION
8. GREATEST IN SIZE
9. FABRICATORS
10. PREPOSITION
11. LUBRICANT
12. LARGE VACANT LOT
13. FACILITIES FOR WORK
14. DEFINITE ARTICLE
15. A HARD METALLIC SOUND
16. PREPOSITION
17. POSSESSIVE PRONOUN—PLUR.
18. EQUIPMENT
19. PART OF VERB "TO BE"
20. LISTENED INTENTLY
21. CIRCULAR
22. DEFINITE ARTICLE
23. THE GLOBE.
24. CONJUNCTION
25. DEFINITE ARTICLE
26. RIVAL OF MAZDA LAMPS
27. ALWAYS
28. GLITTERS
29. ON TOP OF
30. A LITTLE
31. THE THING MANUFACTURED
32. PREPOSITION
33. PRONOUN
34. MAKE

"OILWELL"
ESTD. 1862
TRADE MARK.
REGISTERED

NATURAL GAS DEVELOPMENTS

ELECTRICAL PROCESS FOR MAKING CARBON

The possibility of manufacturing carbon black from oils by an electrical process which possesses advantages over present methods of making this important industrial material by incomplete combustion of natural gas is established as the result of experiments conducted by the Department of the Interior at the Pittsburgh experiment station of the Bureau of Mines.

In the course of investigations of the effects of high voltage electrical discharges on hydrocarbons, it was noted by the Bureau of Mines chemists that under certain conditions, natural gas could be decomposed and carbon black produced. The effects of several types of electrical discharges on natural gas and on liquid hydrocarbons and others oils was therefore studied by J. J. Jakosky, associate engineer, in order to ascertain the fundamental factors in the reactions. In the study of natural gas, the possible influence of these factors on the recovery of a larger part of the carbon content of the gas than is now possible was investigated.

In the manufacture of carbon black from oils, by the arc process developed by the Bureau of Mines, the two main essentials are a cheap electric power and cheap light oil distillates. The process is suitable for noncontinuous or intermittent operation and could, therefore, utilize some of the cheap off-peak power available in practically all parts of the United States and in many foreign counties. Because of the abundance of cheap off-peak power in nearly all large industrial centers, carbon black in many places can be manufactured where it is needsd, with a considerable saving in freight rates alone. Especially will this be true as to certain eastern States and as to foreign markets. Prices for second-class power differ considerably with local conditions, but enough off-peak power is available in well scattered regions of this country at prices ranging from 0.01 cent to 0.05 cent per kilowatt hour. Power in many foreign countries is considerably cheaper.

In connection with the electrical manufacture of carbon black by the Bureau of Mines process, it is probable that the unsaturated gases produced during the decomposition of the oil may constitute profitable byproducts if utilized for the manufacture of alcohols. Noncondensable gases formed in connection with the process are suitable for domestic fuel and could probably be sold in those localities where a market exists for domestic gas, thus reducing the total net cost of producing carbon black.

TO TEST DEEP WELL IN WASKOM DISTRICT

SHREVEPORT, La., Jan. 24.—Tests of the first deep well in the Waskom gas district, probably will be made before the end of the month. Gulf Production Co., which is drilling four such tests for the Woodbine sand at around 2,400 to 2,500 feet, is preparing to set 6-inch casing at 2,285 feet in No. A-1 Waterman Lumber Co., in which the second string was cemented some time ago.

Location of this first test is between State Line Drilling Co.'s Nos. 3 and 5 Waterman Lumber Co., in the south end of the lease in the J. Pollack survey, just west of the State line.

Thomason and others brought in a 25,000,000-foot gas well in the deep sand at 1,944 feet in their No. 1 Abney in the J. J. Blair survey, approximately 1 mile southwest of Waskom station. South of the Waskom district, Magnolia Petroleum Co. completed No. 9 Steele on the R. C. Jordan survey, making 5,000,000 feet of gas at 1,943 feet.

1924 A STRENUOUS YEAR FOR CARBON BLACK MANUFACTURERS

SHREVEPORT, La., Jan. 26. — An almost continuous fight was waged in 1924 against the carbon black industry by the Louisiana State Conservation Commission, claims having been made that a fraudulent use of gas by the carbon manufacturers had resulted in serious and unwarranted depletion of the supply.

According to the rules of the gas department, the withdrawal of gas from any well in the Monroe territory was limited to 20 per cent of its open flow capacity, but it was discovered that the purpose of this rule was being defeated by close drilling, sometimes a well being drilled to every 20 acres. As the department had no authority to limit the spacing of the wells, it was decided that no gas could be taken from the wells after the rock pressure had fallen below 200 pounds to the square inch. This rule was made effective on March 15.

Following an investigation into conditions in the Monroe Field, disclosures were made which resulted in a 10 days' inquiry conducted by the Ouachita Parish grand jury. In order to evade the law which forbade the use of more than 20 per cent of the production of any well for the manufacture of carbon, it was found that a device had been used which permitted the gas to pass by without going through the meter, thereby enabling the carbon makers to use any quantity of gas without registration. Investigation showed that these by-passers had been almost universally used, making it practically impossible to fix specific violations of the law. This disclosure necessitated the installation of an adequate field force by the conservation department for that particular area.

Formal charges were made in May by the Attorney General to the Governor of Louisiana against the carbon companies, but the trial was postponed until the full term of court and by that time an amicable agreement had been reached with the carbon manufacturers and steps to protect the gas fields of North Louisiana have since met with no active resistance.

Regauging of all wells in the Monroe Field was ordered by the commission and a substantial reduction of the amount of gas to be taken from the field was advised. As a result of this regauging there was a decrease of 8.8 per cent in the open flow capacity of all wells in that field and the rock pressure in the Swartz gas area where the carbon industry is most active has been reduced to an average of 333 pounds, a drop of 25 per cent.

The substitute carbon black bill, which was passed July 1, provides that no wells can be used for the manufacture of carbon black with a pressure of less than 200 pounds, and with this ruling now in effect it is easily seen that gradual abandonment of this section of the field for anything but fuel purposes is inevitable.

For a part of the year there was a decided decrease in carbon black production as the market was poor. Recently, however, the plants have shown great activity and are taking full advantage of their gas allowance. The first of the year the consumption of natural gas by the carbon black plants in the Monroe gas field reached its peak when a daily average of 433,000,000 feet was used, the total for a week being more than 3,000,000,000 feet.

As the market is still poor and most of the present production will be put into storage this sudden activity is probably due to the report that a reduction by departmental ruling is in prospect for the near future. This ruling will cut almost in half the consumption of natural gas by carbon black plants. The decision to put the reduction order into effect follows an intensive study of the cabron black and natural gas situation by the new conservation commissioner and a series of negotiations with the carbon black interests themselves, looking toward an amicable settlement of the whole problem.

CARBON CONSUMPTION IN MONROE DECLINES

MONROE, La., Jan. 24.—Showing consumption of 412,000,000 feet for the week ending January 10, the report of the conservation department office showed a decrease from the high mark in the use of natural gas in the Monroe Field set during the seven-day period ending January 3. During the record week, consumption averaged 433,000,000 feet daily, or an average of 21,000,000 feet more per day.

The total still stands far above the amount used in the field last spring, due to the fact that the carbon black manufacturers are using their entire quotas, augmented by additional wells, to store up as much black as possible before the impending departmental reduction order is put in force.

Figures covering the number of square feet of channel surface in every plant in the field have been compiled by the department upon information furnished by the companies and will be used as the basis for the new method of regulation. That expansion through new drilling in the field will be largely halted as result of the impending order is evidenced in the fact that for the first time in many weeks there were no completions reported for the week and only one permit granted, to the Southern Carbon Co.'s No. 45 lee, in Section 11-19-4, Ouachita Parish.

NEW CARBON MERGER CONCLUDED IN MONROE

MONROE, La., Jan. 24.—Merger of carbon black companies involving nine concerns operating in the Monroe gas field and consolidating assets estimated at around $15,000,000 is announced as the culmination of several weeks of negotiations here and in the eastern headquarters of several of the concerns. Despite the absence of the Southern Carbon Co., the largest in the Monroe Field, from the consolidation, the merger will be of sufficient size to accomplish its purpose, carbon men here say.

Under the name "United Carbon Co." the following concerns will operate as one corporation: Cosmos Carbon Co., Standard Carbon Co., Pelican Carbon Co., Central Carbon Co., Louisiana Gas Products Corp., Humphries Carbon Co., Magnolia Carbon Co., United Oil & Natural Gas Products Co., and the Consolidated Carbon Co. It is expected that several companies in the eastern fields will be included.

Officers of the new company have been elected as follows: President, C. A. Barbour, Houston, Texas, who is an official in several carbon concerns and president of two companies; vice president, Oscar Nelson, Charleston, W. Va., now president of the Cosmos Co.; vice president, Dr. E. L. Bartley, Monroe, now vice president of the Standard Co.; and secretary-treasurer, G. A. Williams, Charleston, of the Louisiana company.

Under the merger, all of the companies involved will lose their identity and their offices will give way to a central office from which all of the plant and the marketing activities will be controlled. It is not expected the merger will materially affect the gas conservation problem, although there are indications it would be an assistance since the merger was brought into being largely to handle production, so as to eliminate the present glut in the market.

The new company will start operation in two months. Meanwhile, the necessary readjustments in directorate, etc., will be made.

GETTING READY FOR BIG WINTER DEMAND FOR FUEL

Laying one of the trunk lines serving natural gas to Buffalo, N. Y.

EQUIPMENT AND SUPPLIES

BETTER LUBRICATION FOR GAS ENGINE USE

In the gas engine, whether burning natural or artificial gas, producer gas or blast furnace gas, there is the desirable condition from a lubricating standpoint of a perfectly vaporized fuel. Despite this advantage it is still possible to mix these fuels thoroughly with the right amount of air, secure complete combustion and still have cylinder trouble, due to the presence of dust, carried in suspension in the gas or air. This dust causes abrasion of the cylinder wall and piston ring unless pretty nearly perfect lubrication can be secured.

McCord class "B" lubricators, the manufacturers say, maintain an even, continuous flow of oil to the cylinder walls. For gas engine service they have the advantage that the quality of oil can be closely regulated and can be delivered at just the right place for effective service. One kind of oil may be used for the cylinders and other for the bearing, selecting oil of a viscosity best adapted for both conditions which are, of course, quite different.

Such representative builders as the Bessemer Gas Engine Co., and Miller Improved Gas Engine Co. use McCord lubricators as standard equipment.

Large oil producing companies are realizing the advantages of mechanical lubrication, and equipping their various field engines, principally those used on beam well pumpers and the gas engines for the powers, with force feed lubricators.

McCord class "B" Lubricators serve a dual capacity in this regard, showing, it is said, a saving of at least 50 per cent in the amount of oil consumed and also in maintenance insurance. Gas engines mechanically lubricated are said to have a longer life in service and less shutdown for repairs, and the cost of one shutdown for unnecessary engine repairs will more than offset the cost of installing a positive lubrication system.

McCord Lubricators are carried in stock in all parts of the oil country.

STANDARD PURCHASE FORMS ARE ADOPTED

Standard invoice, purchase order, and inquiry forms for recommended use by a national conference held under the auspices of the Division of Simplified Practice, Department of Commerce, at Washington, D. C., January 14.

Forty-five organizations were represented at the conference. These included the producer, distributor and consumer as well as the wholesaler and retailer in the leading commercial fields. A survey of a large number of representative firms showed an estimated average saving of $620 per year if all invoices received were standardized. This would amount to an aggregate annual saving of $15,000,000 in all lines of American business. Since this figure applies only to the standard invoice, the conference has started a movement which will involve a much larger figure through the standardization of purchase order and inquiry forms as well. This indicates the tremendous possibilities involved in the simplification of other lines of office documentation and procedure.

Copies of the standard invoice, inquiry and purchase order forms as adopted by the conference may be secured upon application from the Division of Simplified Practice, Department of Commerce, Washington, D. C., or from the National Association of Purchasing Agents, Woolworth Building, New York, N. Y.

RETURNED FROM EAST

J. C. Jackson, sales manager of the Slater Brothers' Specialty Co., has returned to Tulsa from a business trip to New York and Pittsburgh.

HOLD ANNUAL MEETING

The district and branch managers of the southwestern district of the Marion Machine, Foundry & Supply Co., of Marion, Ind., held their annual meeting in Dallas, Tex., January 19. C. D. Erlewine is general manager for that district and those present were: D. B. Martin, of El Dorado, Ark.; G. D. Michaelson, of Wichita Falls, Tex.; Francis H. Miller, of Mexia, Tex.; J. D. Stubblefield, of Breckenridge, Tex.; J. J. Kelly, of Ranger, Tex.; M. A. Fuglaar, of Olney, Tex.; Adolph Honnegar, and J. G. Michaelson, of Dallas, and C. D. Erlewine, of Houston, Tex.

FACTORY REPRESENTATIVE

The B. & A. Specialty Co., 309 West First Street, Tulsa, Okla., is now factory representative for Buck & Stoddard, manufacturers of manganese casing sheaves. The company is also the representative of the Baker Casing Shoe Co. and the Garbett Brass & Machine Co. Complete stocks of all products of these concerns are carried at the Tulsa offices.

J. W. ADAMS WITH MURRAY

The Murray Tool & Supply Co., of Cleveland, Okla., announces that J. W. Adams has entered the service of the company and will have charge of its various machine shops.

VISITING SALES OFFICES

C. D. Wagoner, sales manager of the Axelson Machine Co., recently went on a tour of inspection of the company's offices in Taft, Bakersfield and Coalinga, Cal.

STEAM BOILER GAUGE GASKET HAS 60 SEATS

The Water's gauge for steam boilers is a perfected piece of oil field equipment which reaches a high degree of finish and quality of materials used, as well as workmanship. One of the advantages claimed for the gauge is that the gasket contains 60 seats, or changes, for the nipple when needed. A change can be made by a slight operation. The large number of seats assure long intervals between replacement of the gaskets. These gaskets are made of a special metal having a minimum of contraction and expansion. The nozzle tip, which seats in

the gasket, is of Monel, a metal especially free from infection from acids or corrosion. Likewise, the bolt running through the handle of the gauge, holding the gasket in place, if of non-corrosive metal, being made of bronze. All the materials used in the gauge are of the highest quality.

Another feature that is appreciated by field men is the fact that the handle is pitched at an angle of 15 degrees and only has to be lifted a short distance to clear the seat, thus allowing the water or steam a prompt escape with a minimum of deflection back against the boiler. The Waters' gauge is distributed by the Smith Separator Co., of Tulsa, and is offered to the trade through all the supply stores.

COMPLETES PIPE LINE

The Shaffer Oil & Refining Co. has completed its four-inch pipe line from the Cromwell Field in Oklahoma to Wewoka, a distance of about 15 miles while its six-inch pipe line from Cushing to its Midway pump station, southwest of Bristow, will be finished in the near future. The completion of these lines gives the company a capacity of 10,000 bbls. daily to its refinery tank farm at Cushing, Okla.

H. H. FLEMING IS MADE MANAGER FOR OCECO

Hart H. Fleming, previously with the development department of the Standard Oil Co. of New Jersey, is now manager of the Oil Conservation Engineering Co., of Cleveland, Ohio. In this capacity he has taken over the duties of Stephen H. Brooks, resigned.

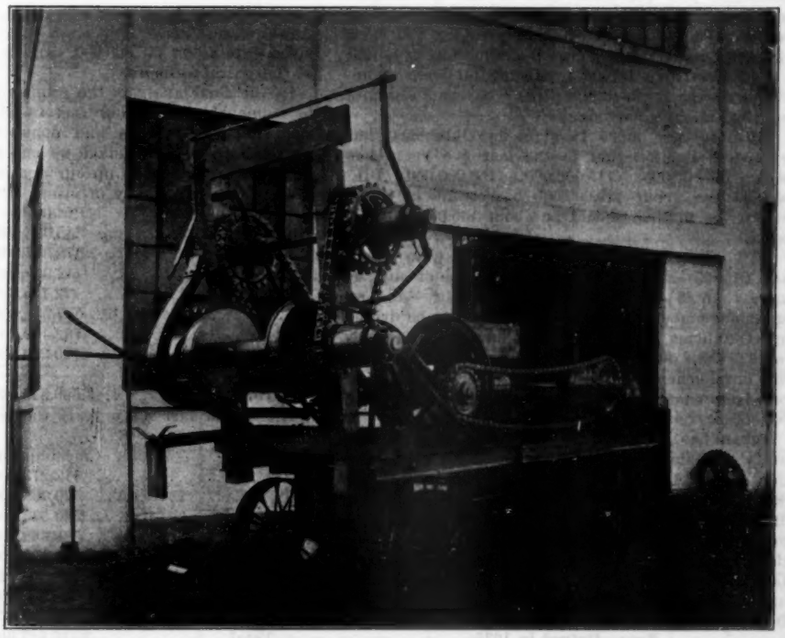
During his eight years with the Standard Oil Co., Mr. Fleming has been connected in an executive capacity with the producing, refining, marketing and engineering divisions of that company, working both in this country and Europe.

Soon after the signing of the Treaty of Versailles, he was sent to Rumania, where as mechanical superintendent and chief engineer of the Standard's Rumanian properties, his work included the rebuilding of one of the largest refineries on the continent.

Recently as a member of the committee studying evaporation and storage problems, Mr. Fleming has given particular attention to the seriousness of the evaporation problem and methods of overcoming the losses as well as fire hazard it represents, through conservation by suitable tank equipment.

SUB-CHASER OUTFIT DESIGNED FOR GEOLOGICAL WORK

"No. 2 Sub-Chaser Outfit" is the name of a machine manufactured by the Beaumont Iron Works Co., of Beaumont, Tex. It was originally designed for geological work in the red bed country of Oklahoma and Kansas, in the plains of Texas and the Gulf Coast region, where it is difficult for the geologist to find top strata well enough defined to locate an anticline and where the expense of rigging up a steam rig to make drilling tests was practically prohibitive. The necessity for a machine that would drill holes of 1,500 or 2,000 feet at the least expense, led to the development of the No. 2 Sub-Chaser, now popularly known by geologists as the "Dome Chaser." It is being used in Venezuela, Argentina and Columbia, in parts of Mexico and in Southwestern Texas and Louisiana for strictly geological work.



The success which the geologists have had with this machine has attracted the attention of producers in several shallow fields and many are using the subchaser to drill wells in old territory where production is small. It is being used for this purpose particularly in the Spindletop, Saratoga, Batson and Humble Fields of Texas

Other uses for the machine naturally follow because of its economy. The repairing of wells in the Coast country, clearing out sand, renewing screens, setting new liners and so forth provide much work for it.

Four men can operate the rig successfully on a tour whether drilling or repairing wells, and the fuel consumption under a full load is two gallons of kerosene or gasoline an hour. The saving on a nine-hour tour operation, is, according to the manufacturers, about $6 a day for fuel alone. In setting up time, it will save the time of five men about three days, and in moving expense it will save about 80 per cent of the teaming bill.

The wagon and draw works are made entirely of steel and are described as indestructible. The engine is a 25 h.p. Witte, using either gasoline or kerosene, and the pump is a 4½-inch by 10-inch gear driven straight shot type. The wagon has dust-proof journals to prevent them from cutting out or filling with mud and grit.

The draw works are of the two-speed type, and the drill stem and tubing can be handled as rapidly as with the larger type.

Production 700,000,000 Bbls. in 1925

This Estimate on Output of Crude Oil This Year is Based on Careful Survey of Conditions in All Fields

By Charles E. Bowles

Based on the oil that was reasonably "in sight" January 1, the production for the year 1925 ought to run around 700,000,000 barrels.

This does not take into account any "Powells" that, undreamed of today, may produce 32,000,000 barrels in a few months—and then drop into the "harmless" class of settled production.

It does, however, include enough new production in Texas to offset the decline and increase the 1924 production by about 5,000,000 barrels. It also includes substantial new production in the Los Angeles Basin—not enough, however, to prevent a decline of about 11,000,000 barrels from the 1924 production. And it does not include any new, large fields in Oklahoma—only the steady, consistent development of present fields and the possibilities of finding new sands under them.

As the crude oil end of the industry is now operating on the basis of slightly over 700,000,000 barrels a year, the question of "barrelage" from the different producing areas resolve itself into "major" and "minor" fields, with California, Oklahoma and Texas in the first class—and the Eastern area, Kansas, Arkansas, Louisiana and the Rocky Mountain area in the second class.

Production From Three States

Referring to the accompanying graphs of the eight producing areas, one clearly sees that the real production comes from three States. In 1922 California, Oklahoma and Texas produced 73 per cent of the total crude output of the United States—in 1923 they produced 75.7 per cent—and in 1924 approximately 75 per cent.

With the Rocky Mountain area, Kansas, Arkansas, Louisiana and the area east of the Mississippi, combined, producing about 25 per cent of the total output, and with each of these areas in the class of settled and relatively small production, it would

With less than 60,000 producing oil wells Januwould be the most likely place where an estimate for 1925 might go wrong.

With no new fields in sight in Oklahoma, but with a production that in the last five years has been 106,000,000, 115,000,000, 150,000,000, 161,000,000 and about 172,000,000 barrels in 1924, the production in 1925 should be about 165,000,000 barrels.

With less than 60,000 produciing oil wells January 1, 1925—and an average production of slightly more than 8 barrels per well per day—and an enormous amount of "proven" territory to be drilled up—Oklahoma is less dependent on new flush fields in 1925 than either Texas or California. This, with the development of deeper sands, should make it relatively easy for Oklahoma to produce about 165,000,000 barrels in 1925.

Texas has about one-third as many producing wells as Oklahoma—and an average daily production of over 18 barrels per well per day—hence the possibility of a quick decline in the State's production if new fields are not brought in. Referring to the eight graphs, the "evenness" of the production curves for the East Coast, Kansas, Arkansas, Louisiana and the Rocky Mountain area is in striking contrast to the curves for California, Texas and Oklahoma with their new big fields in 1923.

Texas Output in 1925

Conceding a rather heavy new production from several promising areas, especially Wortham, and the possibility that another new field will be uncovered along the Balcones fault, Texas might produce 140,000,000 barrels of oil in 1925. In the last five years the production has been 97,000,000, 106,000,000, 119,000,000, 131,000,000 and approximately 135,000,000 barrels in 1924.

Nothing could more clearly emphasize Texas' dependence on big new fields, to keep her production up, than the fact that the big fields of 1923 boosted her output only about 12,500,000 barrels over 1922. Oklahoma, with three times as many wells producing less than half as much per well per day, is in a much "safer" position than Texas—and is much less dependent upon prolific new fields.

California has less than one-fifth as many wells as Oklahoma—and an average production of about 52 barrels per well per day. And it is obvious that if California is to remain even "self-supporting," some prolific new fields must be found in 1925 and 1926. In the last five years, California's production has been 103,000,000, 113,000,000, 138,000,000, 263,000,000 and about 231,000,000 barrels in 1924. Let's concede that in 1925 California will produce 220,000,000 barrels of oil.

Production of Major Areas

On this basis the production of the three "major" fields would be

Oklahoma	165,000,000
Texas	140,000,000
California	220,000,000
Total	525,000,000

With a total production of say 700,000,000 barrels in 1925, these three States would supply 75 per cent of our total output. This would correspond with about 75 per cent which they furnished in 1924—over 75 per cent in 1923—and about 73 per cent in 1922.

Referring to the eight graphs, one finds little promise of "big" production in 1925 from the Rocky Mountain area, Kansas, Arkansas, Louisiana, or the area east of the Mississippi. Pacing the estimates for these areas at

Rocky Mountain Area	45,000,000
Kansas	28,000,000
Arkansas	45,000,000
Louisiana	20,000,000
Eastern Area	37,000,000

gives a total of 175,000,000 barrels or 25 per cent of the year's estimate.

In the final analysis the crude oil situation can be summarized into four factors—domestic production, imports, exports and domestic consumption. The first two factors make up our supply—and the last two factors make up our demand. In the last seven years our supply of crude oil has been:

Year	Production	Imports
1918	355,928,000	37,736,000
1919	378,367,000	52,822,000
1920	442,929,000	106,175,000
1921	472,183,000	125,364,000
1922	557,531,000	127,308,000
1923	732,407,000	82,015,000
1924 (Est.)	720,000,000	78,100,000
Total	**3,659,345,000**	**609,520,000**

And in the last seven years the demand for crude oil has been:

Year	Consumption	Exports
1918	412,273,000	4,901,000
1919	420,462,000	6,019,000
1920	530,532,000	8,757,000
1921	526,032,000	8,940,000
1922	592,432,000	10,163,000
1923	714,316,000	17,385,000
1924 (Est.)	740,000,000	18,500,000
Total	**3,936,047,000**	**74,665,000**

Production and Consumption

In comparing our domestic production with our domestic consumption it is interesting to note that only in the year 1923 did we produce more crude oil than we consumed—and the "margin," in the face of the peak production of eight big fields, was only 18,000,000 barrels—less than 3 per cent.

It is also interesting to note that in the past seven years we have consumed, within the borders of the United States, 276,702,000 barrels more oil than we produced within the borders of the United States.

In this same period we imported 609,520,000 barrels of oil, practically all from Mexico—and exported 74,665,000 barrels of oil, principally to Canada. Hence our supply of oil was 258,153,000 barrels more than our demand—and as our stock of oil January 1, 1918 was 116,221,000 barrels, the stock December 31, 1924 was 374,374,000 barrels.

In 1918, owing to war conditions, we drew 23,510,000 barrels of crude from storage. In 1919 we added 4,708,000 barrels to our storage. In 1920 we added 9,815,000 barrels—in 1921 we added 62,575,000—in 1922 we added 82,244,000—in 1923 we added 82,721,000—and in 1924 we added about 36,600,000 barrels.

In order to get the background for a "Balance Sheet for 1925" let's set up a balance sheet for 1924 as follows:

Stock, January 1, 1924	334,774,000	
Domestic Production	720,000,000	
Imports	78,100,000	
		1,132,874,000
Exports	18,500,000	
Domestic Consumption	740,000,000	
Stock December 31, 1924	374,374,000	
		1,132,874,000

Obviously the four factors—production, imports, exports and consumption—are "variables," but in setting up an estimate for 1925 we can start with a stock, on January 1, of 374,374,000 barrels, which is approximately correct.

Of the "variables," it is easily conceivable that the aggregate production of California, Oklahoma and Texas may not reach 525,000,000 barrels in 1925. On the other hand, however, it is hardly probable that the aggregate production of the Rocky Mountain area, Kansas, Arkansas, Louisiana and the area east of the Mississippi will exceed 175,000,000 barrels.

The Mexican Situation

The "passing," at least temporarily, of the light oil fields in the Tuxpam area of Mexico has definitely changed the Mexican situation from gasoline to fuel oil—and it is probable that in 1925 the imports from Mexico will not exceed 80,000,000 barrels. In any event they will not be dangerous barrels—from a gasoline standpoint.

As we are supposed to be in a present state of "overproduction"—and as our supply of crude oil is the sum of our domestic production and the imports from Mexico, it is obvious that this so-called "overproduction" is directly due either to too much domestic production, or too much oil imported from Mexico, or both.

Measured in terms of increased storage, the net result is the same, regardless of the cause. However, as, during the last seven years, we have produced about 280,000,000 barrels less oil in the United States than we consumed in the United States, the "overproduction" can hardly be laid at the door of the domestic producer.

We either produced too much, in proportion to our imports or we imported too much, in proportion to our production. The two factors, prdouction and imports, got "out of balance"—and our stocks went up.

Approaching the much-discussed subject of "overproduction" from the angle of our being "self-supporting," we find that in the last seven years we had an actual "underproduction" of about 280,000,000 barrels of domestic oil—and that we imported enough oil from Mexico not only to make up this 280,000,000 barrels but to give us an additional 330,000,000 barrels, all of which went into storage except 75,000,000 barrels of exports. Of course we know that Mexican oil didn't actually go into storage, and was not exported—but the importation of 610,000,000 barrels of Mexican oil into the United

States made it possible for us (1) to meet an "underproduction" of 280,000,000 barrels—(2) to export 75,000,000 barrels of foreign countries—and (3) to increase our stored crude by about 255,000,000 barrels—and thereby bring about a condition that is today referred to as "overproduction." And if overproduction is a menace, what part of the responsibility is directly traceable—not to importation, but to "over-importation" of Mexican oil?

Matter of Over-Importation

And instead of calling the present situation "overproduction," can't it be analyzed a step further into an "underproduction" of domestic crude happening at the same time as an "over-importation" of Mexican crude?

The American producer can hardly be "called to account" as long as he is producing less crude oil, within the borders of the United States, than we are consuming—unless, of course, "conservation" means adjusting American production to Mexican imports.

With the background of the close of the World War, inflation, deflation, Mexican imports and the eight big fields of 1923 clearly in mind, an analysis of our domestic consumption during the past seven years is very interesting. Referring to the previously quoted figures showing domestic consumption we find that in 1919 we consumed only 2 per cent more oil than in 1918. However, in 1920, under the spell of inflation, our domestic consumption showed an abnormal increase—26 per cent. The deflation of 1921 left our domestic consumption 1 per cent less than in 1920.

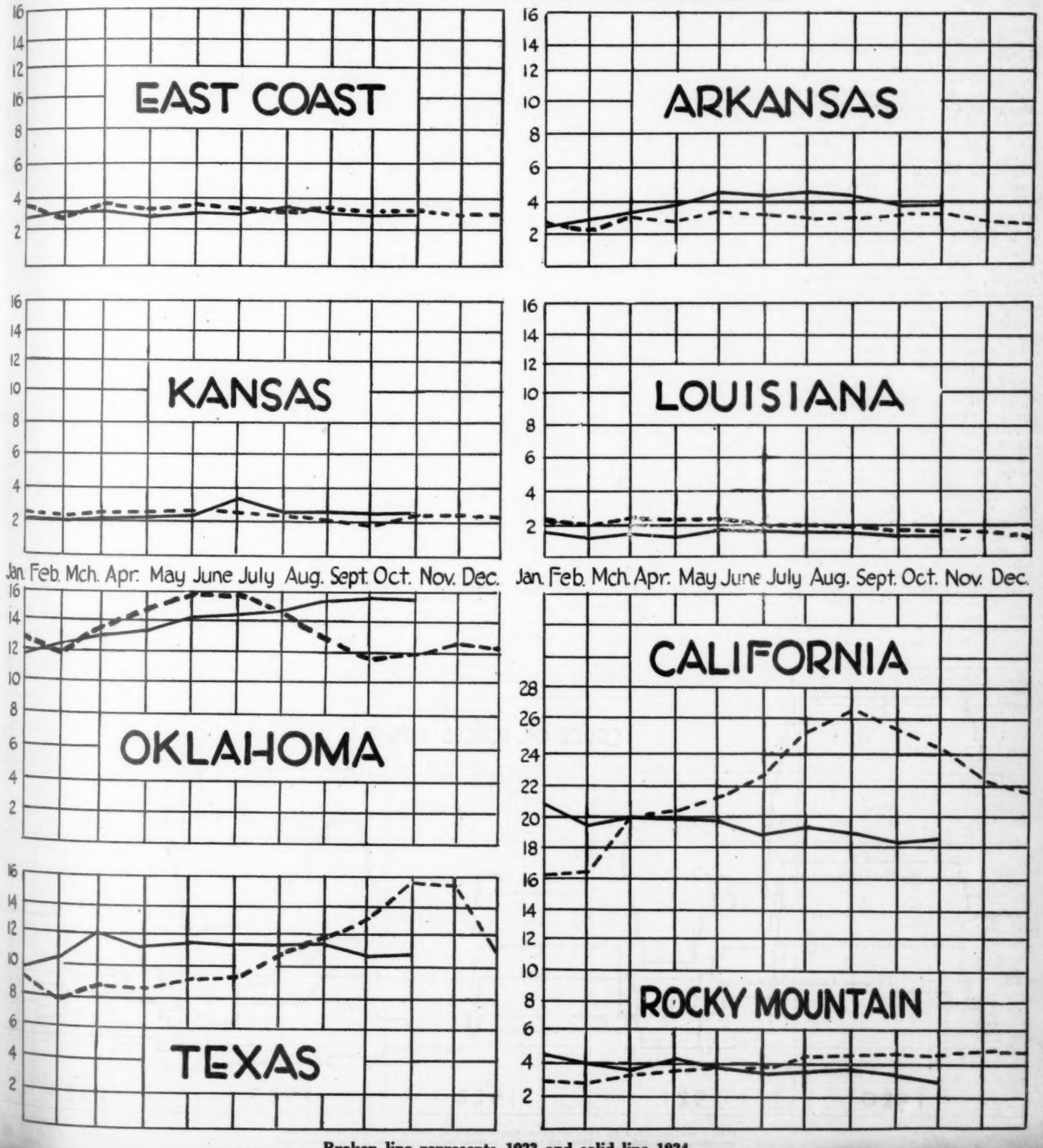
In 1922 the pendulum took a wide swing the other direction and showed a 12 per cent increase over 1921.

And in 1923, under the spur of a 33 per cent increase in domestic production, the pendulum of domestic consumption swung still further, and increased 21 per cent over 1923. The slowing down—and readjustment—came in 1924 with about 2 per cent decrease in production and 3½ per cent increase in consumption.

And in 1925, under financially sound industrial

(Continued on Page 274)

CRUDE PRODUCTION IN MILLIONS OF BARRELS PER MONTH



Broken line represents 1923 and solid line 1924.

Crude Oil Price Changes in All Fields

Dates of Revisions in Posted Quotations Shown in Tables. Chronology Gives Details of Different Prices

By C. O. Willson

January 2.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 10 cents. Imperial Oil, Ltd., advanced Canadian crudes 10 cents.

January 7.—Joseph Seep Purchasing Agency advanced Pennsylvania oil in New York Transit and Bradford oil in National Transit lines 15 cents. Corning crude advanced 15 cents.

January 9.—Prairie Oil & Gas Co. adopted the scale of four schedules made effective by The Texas Co. in Oklahoma, Kansas and North Texas December 27, and advanced The Texas Co. prices established at that time, 10 cents. Change met by all major purchasing companies with the exception of the Magnolia Petroleum Co. The latter company met the Prairie prices on all grades above 33° gravity and advanced its quotation on 31 to 32.9-degrees, 10 cents. Humble Oil & Refining Co. advanced Gulf Coast crudes 25 cents and established a four-grade schedule for Ranger with 10-cent advance except 30°-32.9°. Same company advanced Currie 15 cents and Mexia and Powell 10 cents.

January 10.—Joseph Seep Purchasing Agency advanced Pennsylvania crudes 25 cents, Cabell crude 15 cents, Somerset crude 20 cents and Somerset light 25 cents. Premiums on Somerset crudes produced after October 1, 1922, discontinued. Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 20 cents. Canadian crudes advanced 20 cents. Standard Oil Co. of Louisiana advanced crudes in Louisiana and Arkansas 10 cents with exception of Bellevue, where the advance was 25 cents. Ohio Oil Co. advanced Grass Creek light, Elk Basin and Lance Creek crudes 45 cents, Big Muddy 40 cents, Rock Creek 50 cents and Mule Creek 25 cents. Midwest Refining Co. advanced Salt Creek Field 40 cents. Other Wyoming and Montana fields advanced from 25 to 45 cents, except Sunburst, where no change was made. Magnolia Petroleum Co. advanced Corsicana Light and Mexia to $1.35. Atlantic Oil Producing Co. posted new scale of four schedules for Stephens, Ark. crudes. Indiana Refining Co. posted $1.66 for Western Kentucky light and $1.46 for Western Kentucky heavy; Paragon Development Co. posted price of $1.60 for Warren and Simpson County (Kentucky) crudes and $1.80 for Cumberland and Monroe crudes.

January 11.—Gulf Refining Co. advanced its Grade A. Gulf Coast crudes to $1.50 and Grade B $1.25. Other major purchasing companies met these prices either on this date or January 10, when the advance was first made effective by the Humble Oil & Refining Co.

January 14.—Joseph Seep Purchasing Agency advanced Pennsylvania crudes 10 cents. Corning advanced 10 cents. Humble Oil & Refining Co. posted price of $1.40 for Powell and Mexia crudes.

January 15.—Magnolia Petroleum Co.

(Continued on Page 264)

MEXICO

Prices on Mexican crude are not posted but are based on contracts. The dates of changes as given in the table below refer to the first issue of The Oil and Gas Journal in which they appeared.

	January	February		March	May	June			September	
	1	21	28	20	1	5	12	19	11	18
*Tuxpam (Mexican ports)	.80	....	....	1.10	1.30	1.40	....	....	1.16	....
†Panuco (Mexican ports)	.65	....	....	.85	1.05	1.15	....	....	.96	....
Tuxpam (New York)	1.31	1.50	1.56	1.85	2.20	2.12	2.05	1.97	1.75	1.72
Panuco (New York)	1.06	1.25	1.30	1.50	1.71	1.72	1.65	1.57	1.40	1.38
*Plus tax of	.2669	....	....	.257	.292	.3192	....	....	.3233	....
†Plus tax of	.1558	....	....	.157	.165	.174	....	....	.1764	....

WYOMING AND MONTANA

	January			February		March	July			September
	1	10	21	4	15	10	18	29	30	13
Rock Creek	.60	1.10	1.30	....	....	1.55	1.70	1.45	1.30	1.20
Big Muddy	.45	.85	1.10	....	....	1.35	1.50	1.25	1.10	1.00
Mule Creek	.45	.70	....	....	....	.95	1.10	.85	.70	.60
Grass Creek	.95	1.40	1.55	....	....	1.80	1.95	1.70	1.55	1.45
Elk Basin	.95	1.40	1.55	....	....	1.80	1.95	1.70	1.55	1.45
Lance Creek	.90	1.35	1.50	....	....	1.75	1.90	1.65	1.50	1.40
Osage	.90	1.35	1.50	....	....	1.75	1.90	1.65	1.50	1.40
Cat Creek	.95	1.40	1.55	....	....	1.80	1.95	1.70	1.55	1.45
Salt Creek	.60	1.00	1.20	1.45	....	....	1.60	1.25	1.10	....
Greybull-Torchlight	.95	1.40	1.55	....	....	1.80	1.95	1.70	1.45	....
Hamilton Dome	.62½	.92½	1.15	1.27½	....	1.40	1.55	1.30	1.15	1.05
Sunburst	.70	....	....	....	....	.95	1.05	.98	.93	.90
Lost Soldier	....	....	....	....	....	1.16	1.28	1.03	.88	.78

MIDDLE WESTERN STATES

	January				February	March	June	July			September	
	1	2	10	21	4	5	16	7	17	29	30	13	18
Lima	1.53	1.63	1.83	1.93	2.13	2.28	....	2.18	2.08	1.83	....	1.73	1.53
Wooster	1.40	1.50	1.70	1.80	2.00	2.15	2.00	....	1.90	....	1.65	1.55	1.40
Illinois	1.32	1.42	1.62	1.72	1.92	2.07	....	1.97	1.87	1.62	....	1.52	1.37
Indiana	1.33	1.43	1.63	1.73	1.93	2.08	....	1.98	1.88	1.63	....	1.53	1.38
Princeton	1.32	1.42	1.62	1.72	1.92	2.07	....	1.97	1.87	1.62	....	1.52	1.37
Plymouth	.70	.80	1.00	1.10	1.30	1.45	....	1.35	1.25	1.00	....	.90	.75
Waterloo	.80	.90	1.10	1.20	1.40	1.55	....	1.45	1.35	1.10	....	.90	.75

CALIFORNIA

	Jan.		Feb.	Sept.
	1	22	5	24
14° to 19.9°	.60	.85	1.00	....
20° to 20.9°	.61	.86	1.01	....
21° to 21.9°	.62	.87	1.02	....
22° to 22.9°	.63	.88	1.03	....
23° to 23.9°	.64	.89	1.05	....
24° to 24.9°	.65	.90	1.07	....
25° to 25.9°	.66	.91	1.10	....
26° to 26.9°	.67	.92	1.13	....
27° to 27.9°	.68	.93	1.16	....
28° to 28.9°	.69	.94	1.19	....
29° to 29.9°	.70	.95	1.22	....
30° to 30.9°	.71	.96	1.25	....
31° to 31.9°	.72	.97	1.28	....
32° to 32.9°	.73	.98	1.31	....
33° to 33.9°	.74	.99	1.34	....
34° to 34.9°	.75	1.00	1.37	....
35° and above	.76	1.01	1.40	....
35° to 35.9°	....	....	....	1.40
36° to 36.9°	....	....	....	1.46
37° to 37.9°	....	....	....	1.52
38° to 38.9°	....	....	....	1.58
39° to 39.9°	....	....	....	1.64
40° to 40.9°	....	....	....	1.70
41° to 41.9°	....	....	....	1.76
42° and above	....	....	....	1.82

GULF COAST

	January			Mch.	April	July		Aug.	Sep.	Nov.
	1	19	25	20	1	8	18	9	17	4
Grade "A"	1.25	1.50	1.65	1.80	2.00	1.75	1.50	1.35	1.35	1.40
Grade "B"	1.00	1.25	1.40	1.50	1.70	1.45	1.30	1.15	1.05	1.25

Above prices apply to Sour Lake, Goose Creek, Vinton, West Columbia, Orange, Jennings, Spindletop, Pierce Junction, Hull, Blue Ridge, and other pools of the Gulf Coast area.

Following are the specifications for Gulf Coast Crudes as posted by Humble Oil & Refining Co.:

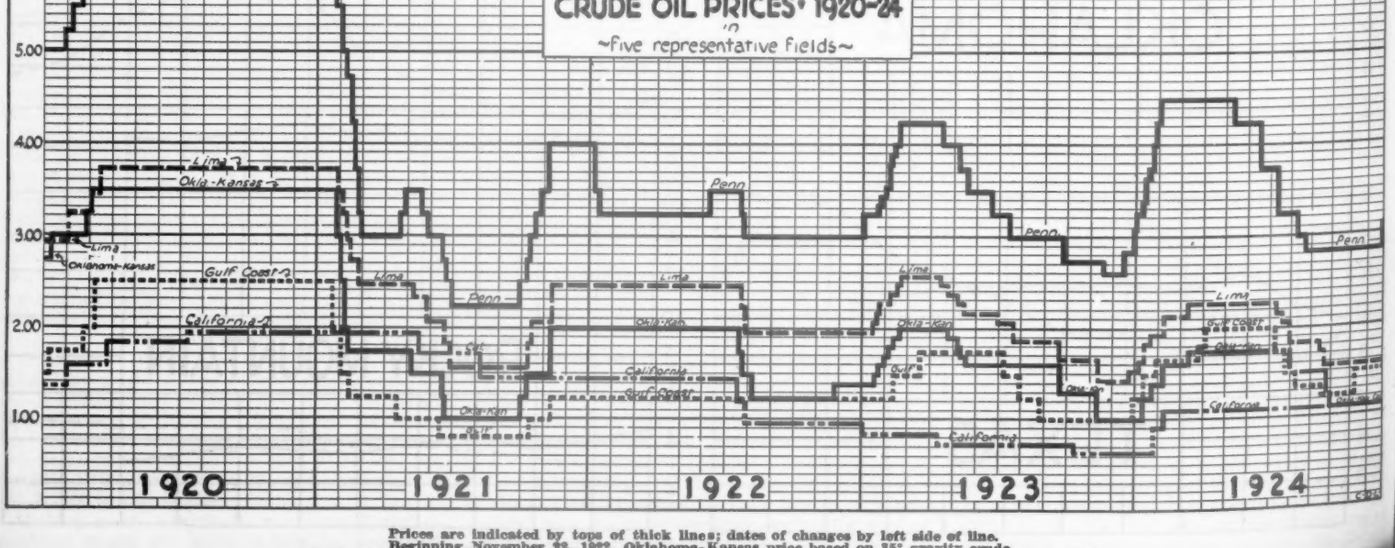
Grade "A"—Viscosity not less than 100 seconds at 100° F. Saybolt. Sulphur not over .4 per cent. Baume gravity not over 25 at 60° F.

Cold test of dirtillates having viscosity of 1,Q00 seconds at 100° F., A. S. T. M. method.

Grade "B"—Embraces all coastal crude which does not meet the test for "A" Grade crude.

CANADA

	January				Feb.	March	July			Aug.	Sept.	
	1	2	10	19	4	8	7	17	29	21	15	18
Oil Springs	2.00	2.10	2.30	2.40	2.60	2.75	2.65	2.55	2.30	2.55	2.45	2.30
Petrolia	1.93	2.03	2.23	2.33	2.53	2.68	2.58	2.48	2.23	2.48	2.38	2.23



Prices are indicated by tops of thick lines; dates of changes by left side of line.
Beginning November 22, 1922, Oklahoma-Kansas price based on 35° gravity crude.
Beginning February 1, 1923, Pennsylvania price based on Pennsylvania grade oil in N. Y. Transit lines.

OKLAHOMA, KANSAS AND NORTH CENTRAL TEXAS

*Prairie Oil & Gas Co.—

	January 1		January 9	January 19		Feb. 2	March 8		July 17	July 28		September 17		September 27
Below 33°	.75	Below 33°	1.00	1.15	Below 30°	1.15	1.25		....	1.10	.85	Below 30°	.75	
33° to 39.9°	1.00	33° to 35.9°	1.25	1.40	30° to 32.9°	1.30	1.45		....	1.25	1.00	30° to 32.9°	.90	
40° and above	1.25	36° to 38.9°	1.40	1.60	33° to 35.9°	1.60	1.75	33° and above	1.75	1.50	1.25	33° to 35.9°	1.10	
		39° and above	1.50	1.75	36° to 38.9°	1.85	2.00		....	....	....	36° and above	1.25	
					39° and above	2.00	2.25		....	....	....		....	

Note—Prairie Oil & Gas Co. on July 1 announced that it would only purchase as much crude oil as it delivered to customers. On July 17 the company announced that it would pay for half of its crude purchases storing the remainder which it would purchase within one year. Effective October 1, the company announced it would purchase 100 per cent of its runs and buy the crude stored for producers.

*Prices posted by Sinclair Crude Oil Purchasing Co. are the same as those of the Prairie Oil & Gas Co. except that on July 12 it posted the following schedule: Below 30°, $1.25; 30° to 32.9°, $1.45; 33° to 35.9°, $1.75; 36° and above, $2. On July 15 a price of $1.75 was adopted for 33° and above. On September 17 the company adopted Prairie's schedule again.

Magnolia Petroleum Co.—

	January 1	January 9	January 19	Feb. 2	Mar. 8	May 10		June 6		July 26		Oct. 4
Below 28°	.50	.50	.75	1.00	1.00	1.00		.90		....		....
28° to 30.9°	.75	.75	1.00	1.15	1.20	1.15		1.00		.....	Below 30°	.75
31° to 32.9°	.90	1.00	1.15	1.30	1.45	1.30		1.10		....	30° to 32.9°	.90
33° to 35.9°	1.15	1.25	1.40	1.60	1.75	1.60		1.35	33° and above	1.25		....
36° to 38.9°	1.30	1.40	1.60	1.85	2.00	1.75	36° and above	1.50		....		....
39° and above	1.40	1.50	1.75	2.00	2.25	2.00		....		....		....

	January 1	January 10	January 15	January 19	Feb. 2	Mar. 8	May 10	June 6	July 26
Thrall	1.00	....	....	....	....	....	....	....	....
*Corsicana light	1.25	1.35	1.40	1.60	1.85	2.00	1.75	1.50	1.25
Corsicana heavy	.50	....	....	.75	1.00	....	....	.90	....
Mexia	1.25	1.35	1.40	1.60	1.85	2.00	1.75	1.50	1.25

*Corsicana light schedules apply to Powell Field.

The Texas Co.—

	January 1	January 19		Feb. 2	Mar. 8		July 16	July 17	July 28		September 17	September 27
Below 30°	1.00	1.15		....	1.25		....	....	1.10	.85		.75
30° to 32.9°	1.25	1.40		....	1.45		....	....	1.25	1.00		.90
33° to 35.9°	1.40	1.60		....	1.75		....	....	....	....		....
36° and above	1.50	1.75	36° to 38.9°	1.85	2.00	36° and above	2.00	33° and above	1.75	1.50	1.25	33° to 35.9° 1.10
			39° and above	2.00	2.25		....	....	....	....	....	36° and above 1.25

	January 1	January 10	January 14	January 19	Feb. 2	Mar. 8	July 9	July 18	July 11	Aug. 17	Sept. 17
Currie	1.25	1.50	....	1.75	2.00	2.25	2.00	1.50	1.35	1.25	1.25
Mexia	1.25	1.35	1.40	1.60	1.85	2.00	1.75	1.50	1.35	1.25	1.25
Powell	1.25	1.35	1.40	1.60	1.85	2.00	1.75	1.50	1.35	1.25	1.25

Humble Oil & Refining Co.—

	January 1		January 9	January 14	January 19		Feb. 2	Mar. 8	May 10	May 19	July 8	July 17		July 28	Aug. 9	Aug. 17	Sept. 19	Oct. 3	Dec. 19
Below 30°	.90		....	....	....		1.15	1.25	1.15	1.25	1.00	....		....	....	.90	....	....	•....
30° to 32.9°	1.00	Below 33°	1.00	....	1.15	30° to 32.9°	1.30	1.45	1.30	1.45	1.20	....		....	.....	1.10	....	....	•....
33° to 35.9°	1.15		1.25	....	1.40		1.60	1.75	1.60	1.75	1.50	1.40		....	.....	1.25	....	....	•....
36° to 38.9°	1.30		1.40	....	1.60		1.85	2.00	1.75	2.00	1.75	1.60	36° and above...	1.60	....	1.35	....	....	•....
39° and above	1.40		1.50	....	1.75		2.00	2.25	2.00	2.25	2.00	1.75		....	.....	....	....	....	....
Currie	1.25		1.50	....	1.75		2.00	2.25	2.00	2.25	2.00	1.50		....	1.35	1.25	....	....	....
Mexia	1.25		1.35	1.40	1.60		1.85	2.00	1.75	2.00	1.75	1.50		....	1.35	1.25	....	....	....
Powell	1.25		1.35	1.40	1.60		1.85	2.00	1.75	2.00	1.75	1.50		....	1.35	1.25	....	....	....
Wichita-Archer	....		....	....	....		....	....	33° and above...		1.50			....	1.35	....	•....	....	....
Richland	....		....	....	....		....	....	....	....	....	....		....	1.35	1.25	....	....	....
Moran	....		....	....	....		....	....	....	....	....	....		....	1.35	1.25	....	•....	....
Wortham	....		....	....	....		....	....	....	....	....	....		....	....	....	....	....	1.25

*Adopted Prairie Oil & Gas Co. schedule. Changes announced May 19 were retroactive as of May 10. This meant that Humble changes of May 10 did not actually become effective.

NORTH LOUISIANA AND ARKANSAS

(Standard Oil Co. of Louisiana)

	January 1	January 10	January 21	Feb. 6	March 11	April 3	June 10	June 14	July 9	July 19	Sept. 20	Sept. 27	October 6	October 8	October 27	Dec. 13
Caddo—																
Below 32°	.90	1.00	1.15	1.35	1.50	....	....	....	1.25	1.00	....	....	....	....	....	....
32° to 34.9°	1.05	1.15	1.30	1.50	1.65	....	....	....	1.40	1.15	....	....	....	....	....	....
35° to 37.9°	1.15	1.25	1.40	1.60	1.75	....	....	....	1.50	1.25	....	....	....	....	....	....
38° and above	1.25	1.35	1.50	1.70	1.85	....	....	....	1.60	1.35	....	....	....	....	....	....
Homer—																
Below 31°	.90	1.00	1.15	1.35	1.50	....	....	....	1.25	1.00	.85	.75	....	....	....	....
31° to 32.9°	1.05	1.15	1.30	1.50	1.65	....	....	....	1.40	1.15	1.00	.90	....	....	....	....
33° to 34.9°	1.15	1.25	1.40	1.60	1.75	....	....	....	1.50	1.25	1.10	1.00	....	....	....	....
35° and above	1.25	1.35	1.50	1.70	1.85	....	....	....	1.60	1.35	1.20	1.10	....	....	....	....
Haynesville—																
Below 33°	1.05	1.15	1.30	1.50	1.65	....	....	....	1.40	1.15	1.00	.90	....	....	....	....
33° and above	1.15	1.25	1.40	1.60	1.75	....	....	....	1.50	1.25	1.10	1.00	....	....	....	....
Bull Bayou—																
32° to 34.9°	.90	1.00	1.15	1.35	1.50	....	....	....	1.25	1.00	.85	.85	....	....	....	....
35° to 37.9°	1.05	1.15	1.30	1.50	1.65	....	....	....	1.40	1.15	1.00	1.00	....	....	....	....
38° and above	1.20	1.30	1.45	1.65	1.80	....	....	....	1.55	1.30	1.15	1.15	....	....	....	....
Smackover—																
Below 24°	.55	.65	.80	1.00	....	....	.85	....	.70	.00	.75	.85	Below 25°	.85	....	....
24° to 24.9°	.65	.75	.90	1.10	....	....	.95	....	.80	.70	....	....	25. and above	.95	....	....
25° to 25.9°	.75	.85	1.00	1.20	....	....	1.05	....	.90	.80	....	....	....	....	....	....
26° and above	.90	1.00	1.15	1.35	....	....	1.20	....	1.05	.95	....	....	....	....	....	....
El Dorado—																
Below 32°	1.15	1.25	1.40	1.60	1.75	....	....	....	1.50	1.25	1.10	1.00	....	.90	....	....
33° and above	1.25	1.35	1.50	1.70	1.85	....	....	....	1.60	1.35	1.20	1.10	....	1.00	....	....
De Soto	1.25	1.35	1.50	1.70	1.85	....	....	....	1.60	1.35	1.20	1.20	....	....	....	....
Crichton	1.05	1.15	1.30	1.50	1.65	....	....	....	1.40	1.15	1.00	....	....	....	....	....
Bellevue	.90	1.15	1.30	1.55	....	1.75	....	....	1.50	1.25	1.00	1.10	....	....	....	1.35
Cotton Valley	....	....	....	....	....	....	....	1.00	.90	.80	....	....	....	....	.95	....

Atlantic Oil Producing Co.—

Stephens, Ark.—	January 1		January 10	January 21	Feb. 6	July 9	July 19		Sept. 23		Oct. 6
26° to 27.9°	.90	Below 23°	.65	.80	1.00	.75	.60	26° and above	.90	25° and above	.95
28° and above	.95	23° to 25.9°	.85	1.00	1.20	.95	.80	Below 26°	.70	Below 25°	.85
		26° to 27.9°	1.00	1.15	1.35	1.10	.95				
		28° and above	1.05	1.20	1.40	1.15	1.00				

The Texas Co.—

Caddo—	January 1	January 10	January 21	Feb. 6	March 11	July 9	July 21	Sept. 20
Below 32°	.90	1.00	1.15	1.35	1.50	1.25	1.00	....
32° to 34.9°	1.05	1.15	1.30	1.50	1.65	1.40	1.15	....
35° to 37.9°	1.15	1.25	1.40	1.60	1.75	1.50	1.26	....
38° and above	1.25	1.35	1.50	1.70	1.85	1.60	1.35	....
Bull Bayou—								
32° to 34.9°	.90	1.00	1.15	1.35	1.50	1.25	1.00	.85
35° to 37.9°	1.05	1.15	1.30	1.50	1.65	1.40	1.15	1.00
38° and above	1.20	1.30	1.45	1.65	1.80	1.55	1.30	1.15
DeSoto	1.25	1.35	1.50	1.70	1.85	1.60	1.35	....
Crichton	1.05	1.15	1.30	1.50	1.65	1.40	1.15	....

Smackover—	January 1	January 10	January 21	Feb. 6	March 24	April 1	June 10	July 9	July 21	Oct. 3	Nov 26
Below 24°	.55	.65	.80	1.00	.85	....	....	.70	.60	Below 26° .85	Below 25° .85
24° to 24.9°	.65	.75	.90	1.10	1.00	1.10	.95	.80	.70	26° and above .95	25° and above .95
25° to 25.9°	.75	.85	1.00	1.20	1.10	1.20	1.05	.90	.80		
26° and above	.90	1.00	1.15	1.35	1.25	1.35	1.20	1.05	.95		

EASTERN STATES

	January 1	January 7	January 10	January 14	January 19	January 25	January 30	Feb. 13	March 10	May 10	June 14	June 16	July 2	August 2	August 5	August 21	Sept. 6	Oct. 2	Dec. 27
Penna grade oil in New York Transit lines	3.25	3.40	3.65	3.75	4.00	4.25	4.50	....	....	4.25	3.75	....	3.25	....	3.00	2.85	....	....	3.10
Bradford district oil in National Transit lines	3.25	3.40	3.65	3.75	4.00	4.25	4.50	....	....	4.25	3.75	....	3.25	....	3.00	2.85	....	....	3.10
Penna grade oil in National Transit lines	3.00	....	3.25	....	3.50	3.75	4.00	....	....	3.75	3.25	....	3.00	....	2.75	....	....	....	3.00
Penna grade oil in S. W. Pa. Pipe Line lines	3.00	....	3.25	....	3.50	3.75	4.00	....	....	3.75	3.25	....	3.00	....	2.75	....	....	....	3.00
Penna grade oil in Eureka Pipe Line lines	3.00	....	3.25	....	3.50	3.75	4.00	....	....	3.75	3.25	....	3.00	....	2.75	....	....	....	....
Penna grade oil in Buckeye Pipe Line lines	3.00	....	3.25	....	3.50	3.75	4.00	....	....	3.75	3.25	....	3.00	....	2.75	....	....	....	....
Cabell grade oil in Eureka Pipe Line lines	1.45	....	1.60	....	1.75	1.90	2.05	2.20	1.95	1.70	....	....	1.60	....	1.45	....	....	....	....
Corning grade oil in Buckeye Pipe Line lines	1.40	1.55	....	1.65	....	1.80	....	1.95	2.15	....	....	1.90	....	1.75	....	....	1.65	1.60	....
Somerset medium oil in Cumberland P. L. lines	1.40	....	1.60	....	1.75	2.00	2.15	....	2.30	2.05	1.80	....	1.70	....	1.55	....	....	....	....
Somerset light oil in Cumberland P. L. lines	1.55	....	1.80	....	1.95	2.20	2.35	....	2.50	2.25	2.00	....	1.85	....	1.70	....	....	....	....
Ragland grade oil in Cumberland P. L. lines	.85	....	....	....	.90	1.00	....	....	1.10	....	1.00	....	....	....	.90	....	....	....	....

KENTUCKY

	January 1	January 10	January 19	January 25	January 30	March 11	May 1	May 10	May 27	June 14	June 16	July 8	July 14	July 25	August 2	August 5	August 8	Sept. 18	Nov. 6
Western Kentucky light	1.46	1.66	1.81	2.06	2.21	2.36	....	2.05	*36° and above....	2.05	....	1.75	....	1.65	1.55	1.50	....	1.40	1.30
Western Kentucky heavy	1.26	1.46	1.61	1.86	2.01	2.16	....	1.85	33° to 35.9°	1.95	....	1.65	....	1.55	1.45	1.40	....	1.30	1.10
Warren and Simpson Counties	1.46	1.60	1.75	2.00	2.15	2.30	2.36	2.05	Below 33°	1.85	....	1.55	....	1.45	1.35	1.30	....	1.20	1.00
Cumberland and Monroe Counties	1.61	1.80	1.95	2.20	2.36	2.50	....	2.25		....	2.00	....	1.85	....	....	....	1.70	....	....

*Change on May 27 applied to Western Kentucky light and heavy and Warren and Simpson Counties. From September 18 to September 30, the Paragon Development Co. paid 20 cents more per barrel for each of the three grades of crude produced in Western Kentucky, as the company did not follow the Indian Refining Co.'s reduction of 20 cents on September 18. On October 1 the Paragon Development Co. reduced the three grades 10 cents, making its price 10 cents higher than the Indian Refining Co. from October 1 to November 5. On November 6 the Indian Refining Co. met the Paragon price as shown in table.

THE MARION LINE

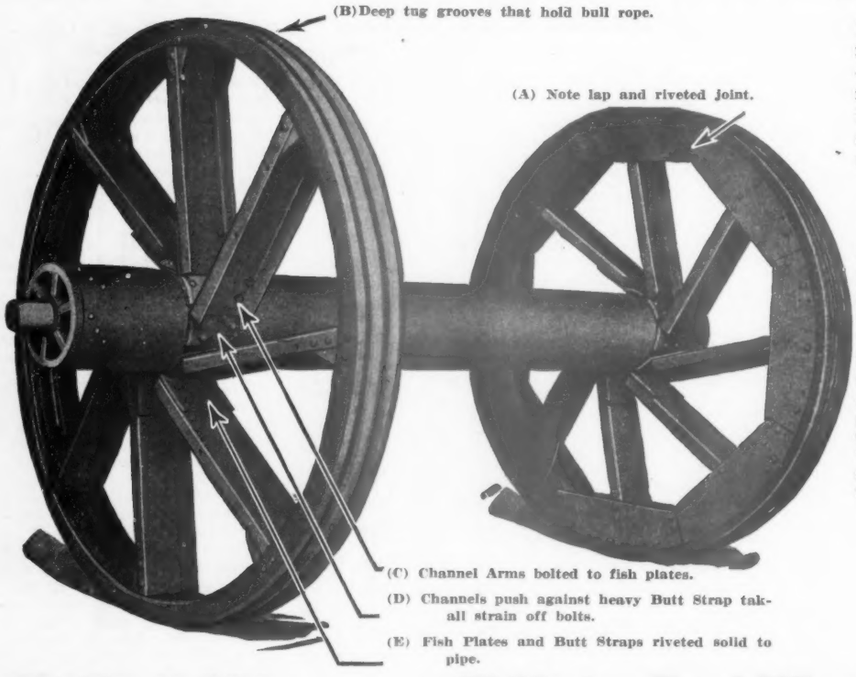
Trade Mark Registered

THE MARION LINE

Trade Mark Registered

Manufacturing Units of

Marion Machine, Foundry & Supply Co.


(B) Deep tug grooves that hold bull rope.
(A) Note lap and riveted joint.
(C) Channel Arms bolted to fish plates.
(D) Channels push against heavy Butt Strap take all strain off bolts.
(E) Fish Plates and Butt Straps riveted solid to pipe.

Keen competition in the oil industry demands efficient machinery in the field and prompt service from the source of supplies. The Marion Line of oil field equipment has many points of superiority which our bulletins describe in detail. Our factories and factory branches located at strategic points and the best of shipping facilities guarantee the service you require.

Marion Steel Bull Wheels

The Tug Rim is one-piece steel plate, rolled into the grooved rim without any joints. The grooves are smooth and even. The shape of the groove grips the rope firmly without clinging. The elimination of bad joints and this firm grip, not allowing slipping means long life for the bull rope.

The arms bolt on to hub plates and the thrust is against the shoulder plates which are firmly riveted to the shaft. Since there is no load on the bolts, Marion Steel Bullwheels will stand the most severe shocks.

The gudgeons being made of semi-steel, have great strength. They are riveted to the shafts with eighteen rivets each insuring light gudgeons.

Check below, the Bulletins wanted and mail to us at once:

- ☐ No. 198 Marion Steel Bullwheels, Band Wheels, etc.
- ☐ No. 199 Marion Tubular Steel Derrick
- ☐ No. 200 Irish Pulling Machines
- ☐ No. 202 Marion Peerless Reversible Clutches
- ☐ No. 203 Marion Gas Engines
- ☐ No. 205 Marion Band Wheel Powers
- ☐ No. 206 Marion Sand Proof Working Barrel
- ☐ No. 214 Marion Hi-Test Sucker Rods

Marion Band Wheel Powers

In addition to the complete line of Keystone Band Wheel Powers which are designed for light and medium depth territories, we offer No. 999 Band Wheel Power for medium and heavy service and No. 2424 Super heavy power for deep territories where service is extremely severe.

View of Marion Band Wheel Power No. 999

Marion Standard Steel Band Wheel

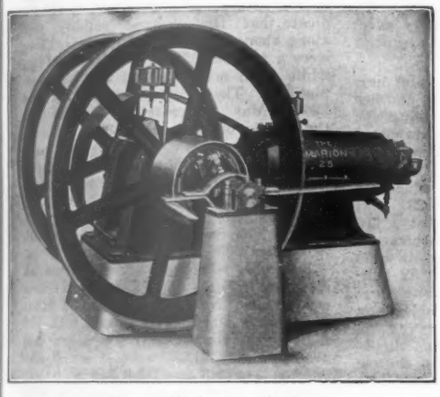
Marion Standard Steel Band Wheels

Marion Standard Band Wheels are scientifically constructed to withstand the greatest strains. A recent improvement of importance is the permanent stops on the hub against which the spokes butt, thereby taking practically all stress off the bolts. The Tug Rim is made of one-piece pressed steel, same as the tug rim on steel bull wheel.

View of Marion Peerless Reversible Clutch

Marion Peerless Reversible Clutches

The Marion Peerless Reversible Clutch has these outstanding points of merit: A direct drive clutch with only one adjustment, ball bearing; internal steel clutch shoe faced with Raybestos; all gears made of nickel alloy steel, hardened and the bore ground to size; all gears are in an oil tight case and run in oil; all pins are nickel steel hardened and run in phosphor bronze bushing; pulley is self-oiling and oil chamber holds about one quart of oil; outboard bearing has oil reservoir with chain oilers; only one adjustment to the reverse; all parts are made to limit gauges and are interchangeable.



View of Marion Gas Engine

Marion Gas Engines

"We have five Marion 25 H. P. Gas Engines as well as other makes and we consider the Marion in a class by itself; one of the Marion Engines ran a hundred and ninety-two days and nights, without stopping, which we consider an excellent recommendation." The above is an extract from a letter in our files. We have many such letters testifying to the merits of the Marion Gas Engine, built especially for Oil Country Service.

Write for Bulletin No. 203

Marion HI-TEST Sucker Rods (Name registered)

Marion HI-TEST Sucker Rods (Name Registered)

Marion Hi-Test Sucker Rods are made of special analysis steel, having a very high maximum tensile strength. The ends are upset, resulting in one piece solid construction, making the rod absolutely weldless. Special threading machines thread the box and pin in perfect alignment with the body of rod. Special forging processes and features give unusual strength to these rods. They are made strongest where the greatest strain comes and will not break under the stress that snaps the regular steel or wrought iron sucker rods. Carried in stock for Prompt Shipment.

View of Marion Perpendicular Gas Pump

FOR YOUR CONVENIENCE FACTORY BRANCHES ARE MAINTAINED AT THE FOLLOWING PLACES:

El Dorado, Ark.	Okmulgee, Okla.	Breckenridge, Tex.
Eureka, Kans.	Tonkawa, Okla.	Burkburnett, Tex.
Scottdale, Pa.	Nowata, Okla.	Mexia, Tex.
Tulsa, Okla.	Wilson, Okla.	Luling, Tex.
Drumright, Okla.	Olney, Tex.	Casper, Wyo.
Bristow, Okla.	Houston, Tex.	Salt Creek, Wyo.

Export Office, 136 Liberty St., New York, N. Y.

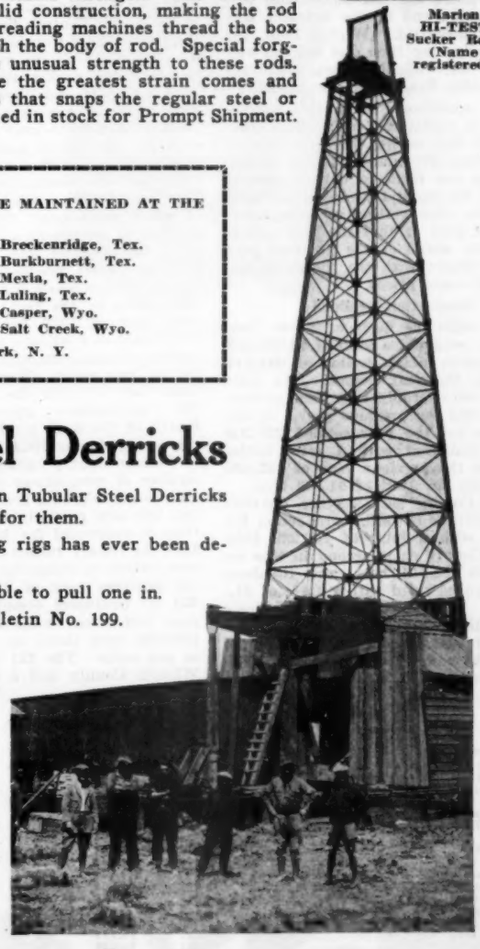
Marion Tubular Steel Derricks

Wherever oil drilling and pumping goes on, Marion Tubular Steel Derricks are found, faithfully performing the duty cut out for them.

No stronger construction for drilling and pumping rigs has ever been devised, than that in which tubular steel is used.

They will not burn down, and it is almost impossible to pull one in.

They cost the least in the long run. Ask for Bulletin No. 199.



Marion Gas Pumps—Marion Sand Proof Working Barrel and All Surface Equipment

Marion Gas Pumps are made to operate from either power or from beam. The valve chambers and valves are all alike and may be used for either suction or exhaust.

The Marion Line of Oil Well Machinery is complete including steel and wood Derricks, Crown Blocks, Bullwheels, Calf and Pony Wheels, Steel Band Wheels, one-piece Tug Rims, Gas Engines, Plain and Reversible Clutches, Band Wheel Powers, Sand Proof Working Barrels, Sucker Rods, Pull Rods, Jacks and all surface equipment.

Write Department O.

Marion Machine, Foundry & Supply Company

Marion, Indiana, U. S. A.

New Pools North Central Texas 1924

Regan, Archer and Wilbarger County Stand Out. Production of the Whole Division Declined Slightly and Completions Were Fewer

By George R. Kelley

FORT WORTH, Tex., Jan. 26.—The trend of affairs in the oil industry of North Central Texas during the past year were rather disheartening on the whole. Oil men generally have come to regard the oil business in any particular field or in any particular part of the country as a sort of up and down proposition and they are usually contented when things come and go that way.

But the year 1924, insofar as the North Central Texas territory was concerned was pretty well down all the year. The year opened with excellent prospects for an advancing crude oil market. In fact one crude advance had already been posted before the close of the previous year and there was every indication that the price would continue to advance, at least to a point where operations in the proven areas could be carried on at a good profit and where wildcatters would have a chance for some profitable returns.

But before the year had progressed very far men in all branches of the industry were apparently seized with an attack of nervousness. The expected crude advances did not materialize and the production end of the industry was extremely unsettled. Winter hung for an unusually long time and refiners and marketers were unable to wrest the expected profits from their operations.

These conditions naturally had a tendency to curtail and delay field operations. In fact during the early part of the year there were numerous and strenuous efforts put forth to curtail production, with the result that field operations were rather slow getting up good headway. But even at that the year stands considerably ahead of the previous year in every respect with the the single exception of crude prices.

Production Declined

During 1924 the fields of North Central Texas produced a total of 44,624,893 bbls. of crude oil, a decline of 918,177 bbls. from the year before. The year developed considerably more new production than did the previous year. Initial production for the year totaled 227,209 bbls. as compared with a total initial output for the previous year of 185,826 bbls., a gain for 1924 of 41,383 bbls.

Archer County led all other districts in the territory in initial production for the year with a total of 130,239 bbls. Wichita County came second in this respect with 32,316 bbls. and Stephens County ranked third with a total of 21,312 bbls. Reagan County, an entirely new district in the producing column developed initial production during the year to the amount of 13,958 bbls. Wilbarger County, also another new producing district, accounted for a total during 1924 amounting to 11,843 bbls.

In the number of wells completed the year 1924 stands considerably ahead of the previous year. Total completions during the year just closed were 2,814 as compared with 2,666 for the year previous, a gain for 1924 of 148. Of the 2,814 holes drilled last year a total of 1,692 or 60 per cent were producing oil wells, 1,047 or 37 per cent were dry holes and 75 or 3 per cent were listed as gas wells.

High Dry Hole Percentage

Out of the 2,666 wells that were reported as completions in 1923, a total of 1,662 or 62 per cent were oil producers, 861 or 32 per cent were dry holes and 81 were gas wells. The 1,692 oil producers for 1924 gave a new flush production of 227,209 bbls., while the 1,662 oil wells of the previous year accounted for only 185,826 bbls. of new production. The average initial production per well in 1924 was slightly more than 13 bbls., while the average per new well in the previous year was a little short of 112 bbls.

Archer County was the main factor in the North Central Texas fields during the year 1924. Considerably more than 50 per cent of all the wells completed in the territory during the year were in Archer County and likewise considerably more than 50 per cent of all the new production for the year came from that county. During the year Archer County had a total of 1,243 completions out of a total for the whole territory of 2,814. The county gave a total of 130,239 bbls. of initial production. Of the 1,243 completions in the county a total of 854 were oil producers and 389 were dry holes. Average initial production per well in Archer County was a little more than 152 bbls. Due to the fact that during the early part of 1923 Archer County was listed only as a wildcat territory, no comparison can be made with the completions for the two years. However, during the latter half of 1923 the county reported 397 completions, approximately one-fourth of the total number completed in the county during 1924.

Wichita County ranked second in the number of completions during 1924, but that county shows a few less completions and less new production during the year than it accounted for in 1923. During 1924 the county turned in a total of 674 completions as compared with a total for the previous year of 715. There were 421 oil producers completed during the year just closed while 253 of the completions were listed as dry holes, with no gas wells. The 421 new oil wells in Wichita County had a flush production of 32,316 bbls. This is an average per well of a little more than 76 bbls.

In field operations Stephens County also fell short of the mark set in 1923. The year 1924 accounted for only 188 completions in that county as compared with 206 for the previous year. New production was also short of the previous year. Last year there were 21,312 bbls. of new production as compared with 33,967 bbls. for the previous year. Of the 1924 completions in Stephens County, 120 out of the 188 were oil producers, 55 were dry holes and 13 were gas wells. Oil wells completed in that county averaged slightly more than 177 bbls. initial production per well.

In the matter of completions and new production Eastland County was another district that came up short during the year just closed. The county reported only 194 completions in 1924 as compared with 249 in the year previous. New production in Eastland was considerably less than half what it was in 1923. Out of 194 completions in the county, 110 were oil producers, 68 were dry holes and 16 were gas wells. The 110 new oil wells had a flush output of less than 52 bbls. per well. Initial production in the county in 1923 amounted to 13,764 bbls. from 152 oil wells.

Like its neighbors Eastland and Stephens counties, Young County also showed up short in the matter of completed wells and new production during the past year. Young accounted for only 110 completions in 1924 as compared with 159 for the previous year. New production in the county was far short of the year before, being only 1,560 bbls., as compared with 7,597 bbls. for the year 1923.

Out of the 110 completions in the county only 29 were oil producers, 79 being dry holes and 2 being listed as gas wells. The average flush production for each new oil well in the county was approximately 54 bbls. In the previous year the county had a new production of 7,597 bbls. from 70 oil wells, an average per well of a little more than 108 bbls.

Activity of Wildcatters

Some of the wildcat districts were particularly active during 1924 but as a whole they fell far short of the record set the previous year. Completions in the wildcat districts for the year totaled 405 as compared with 940 for the year before, a loss for 1924 of 535. Thus it may be seen that the wildcatters were a little timid in their operations during the year.

The wildcat pools however accounted for a total of 36,133 bbls. of initial production during the year, as compared with 53,257 bbls. for the wildcats in 1923. Of last year's wildcat completions only 158 or 39 per cent were oil wells, 203 or about 50 per cent being dry holes and 44 gas wells. The 158 new oil wells had an average initial output of approximately 228 bbls. This average is considerably higher than in any of the proven districts, due probably to the large completions in Reagan County and the South Vernon Field in Wilbarger County, both of which districts are carried in the wildcat columns.

The fact that the month of June leads in the number of completions would indicate that the greatest activity was along about the middle of the year. There were a total of 339 completions in June, while April ranked second with 333 completions. There were 313 in July and 290 in May. Thus it can be seen that the months of April, May, June and July were the busiest months if wells completed is to be taken as a barometer. Completions by months are as follows: January 165, February 176, March 211, April 333, May 290, June 339, July 313, August 206, September 137, October 216, November 205 and December 223.

December with its 223 completions led all other months in the matter of new production. New production in that month was 30,518 bbls. June with 116 more completions than December had produced only 21,907 bbls. of initial production. April was the second largest month in point of new production with 30,296 bbls. New production by months for the entire year of 1924 follows: January, 11,693 bbls.; February, 12,652 bbls.; March, 15,684 bbls.; April 30,296 bbls.; May, 27,023 bbls.; June, 21,907 bbls.; July, 15,210 bbls.; August, 14,377 bbls.; September, 11,475 bbls.; October, 13,790 bbls.; November, 22,584 bbls.; December, 30,518 bbls.

Development of Archer County

In almost every respect Archer County was the banner district for the year 1924. A year ago this county was just coming into the limelight as an oil producing territory, though it lies alongside Wichita County, which, for the past decade, has been one of the most important oil producing counties in North Texas. Considerable exploration work had been done in Archer County too in past years, but apparently it remained for the latter part of 1923 to bring the county to the full attention of the oil fraternity and for the year 1924, probably to develop its best producing possibilities.

The early part of the year saw intensive development of the producing areas of the middle and northern part of the county. During the year before development in Wichita County had in a

(Continued on Page 72)

Production by Month in North and Central Texas in 1924

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Burkburnett	658,285	603,084	640,956	614,970	620,539	583,020	576,414	558,403	527,040	523,094	497,940	483,972	6,893,767
Electra	616,962	553,552	599,385	603,690	642,041	632,370	661,354	638,104	616,050	605,678	555,900	542,779	7,267,865
Iowa Park - K. M. A.	73,036	71,485	84,351	100,890	120,621	142,860	160,766	139,934	132,570	144,398	130,320	122,636	1,423,567
Holliday and Archer County	630,850	707,890	842,518	1,008,480	1,049,281	949,740	965,433	935,394	834,840	975,260	1,150,170	1,213,565	11,262,521
Petrolia	9,052	8,758	8,339	10,050	8,339	8,310	12,276	14,322	11,280	12,276	11,250	11,067	126,319
South Vernon	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,795	122,520	161,696	298,011
Breckenridge	379,967	359,194	377,053	377,010	385,206	346,650	344,689	329,096	303,810	291,121	259,290	250,914	4,004,000
Caddo	141,980	136,590	153,489	171,690	200,260	190,260	218,240	212,753	194,070	179,056	176,320	166,160	2,239,768
Clear Fork	225,618	244,064	232,035	228,810	232,035	258,120	193,254	189,348	180,030	191,456	170,790	165,496	2,501,056
Gunsight	2,108	2,001	2,511	2,190	2,321	2,160	2,728	2,232	2,130	2,077	2,310	2,325	27,593
Ranger-Eastland	264,740	246,471	275,342	264,030	258,075	235,200	237,057	233,430	222,420	228,222	179,010	183,055	2,827,052
Desdemona	93,589	91,060	98,456	105,570	98,425	94,800	97,433	99,417	97,080	92,597	87,930	85,064	1,141,421
Rising Star	3,410	2,958	3,472	3,780	3,038	3,030	2,759	2,883	3,660	2,945	2,850	2,945	37,730
Sipe Springs	7,440	6,061	6,944	6,630	6,820	6,210	7,006	6,231	6,360	5,642	5,940	5,890	77,174
Pioneer	63,860	62,901	70,215	72,000	70,163	61,590	51,274	42,036	33,600	36,053	27,450	26,164	617,306
Brown County	13,857	13,195	13,950	15,480	17,143	19,350	20,367	26,939	27,330	25,451	27,540	26,257	246,859
Callahan County	26,381	24,128	30,814	33,720	43,028	47,280	49,362	48,732	43,500	44,488	48,600	48,360	488,449
Coleman County	3,999	5,858	5,146	4,590	18,166	12,320	1,054	1,581	2,670	3,535	1,620	1,860	62,800
Jack County	1,054	1,247	1,333	1,470	837	1,440	527	1,519	390	1,209	780	775	12,551
Palo Pinto County	4,185	5,220	5,773	5,070	6,448	5,730	4,557	6,727	6,270	9,176	7,680	4,743	74,579
Shackelford County	106,857	107,184	112,554	105,990	121,892	108,180	108,253	107,322	87,870	88,939	75,240	72,346	1,303,726
Regan County	5,160	4,730	5,420	6,100	6,625	10,450	55,955	157,263	158,640	171,740	216,450	262,250	1,066,783
Carson County	.....	.....	.....	.....	31,620	26,460	19,220	32,085	35,070	43,183	33,540	29,295	250,473
Hutchinson County	.....	.....	.....	.....	2,945	4,590	4,185	2,480	2,880	5,115	6,000	5,735	33,930
Mitchell County	26,846	22,620	23,250	25,260	36,764	31,680	46,717	40,796	48,420	50,344	47,340	46,686	446,663
Total 1924	3,359,236	3,280,251	3,595,406	3,767,470	3,983,213	3,787,810	3,840,869	3,929,027	3,577,980	3,746,847	3,844,740	3,912,045	44,624,893
Total 1923	4,311,280	3,316,348	4,175,196	3,595,160	3,823,304	3,940,530	4,778,155	3,496,879	3,227,690	3,990,448	3,178,420	3,202,660	45,543,070
Difference	952,044	36,097	579,790	172,310	159,908	152,720	937,286	432,148	350,290	143,601	666,320	709,385	918,177

Coming Clean

"THE BIT"

All of us like to "throw the bull" once in a while but when its a matter of making hole it "sure nuf" is a question of "coming clean."

That's what we're aiming at. When you drop a REED ROLLER BIT in the hole, you can be sure she's "tuned up" to do the job in a hurry, stand plenty of "gaff" and "make it light on yourself."

W. L. "Bert" Childs, Vice President and General Manager

Reed Roller Bit Co.

HOUSTON, TEXAS

New Pools North Central Texas 1924

Regan, Archer and Wilbarger County Stand Out. Production of the Whole Division Declined Slightly and Completions Were Fewer

By George R. Kelley

FORT WORTH, Tex., Jan. 26.—The trend of affairs in the oil industry of North Central Texas during the past year were rather disheartening on the whole. Oil men generally have come to regard the oil business in any particular field or in any particular part of the country as a sort of up and down proposition and they are usually contented when things come and go that way.

But the year 1924, insofar as the North Central Texas territory was concerned was pretty well down all the year. The year opened with excellent prospects for an advancing crude oil market. In fact one crude advance had already been posted before the close of the previous year and there was every indication that the price would continue to advance, at least to a point where operations in the proven areas could be carried on at a good profit and where wildcatters would have a chance for some profitable returns.

But before the year had progressed very far men in all branches of the industry were apparently seized with an attack of nervousness. The expected crude advances did not materialize and the production end of the industry was extremely unsettled. Winter hung for an unusually long time and refiners and marketers were unable to wrest the expected profits from their operations.

These conditions naturally had a tendency to curtail and delay field operations. In fact during the early part of the year there were numerous and strenuous efforts put forth to curtail production, with the result that field operations were rather slow getting up good headway. But even at that the year stands considerably ahead of the previous year in every respect with the the single exception of crude prices.

Production Declined

During 1924 the fields of North Central Texas produced a total of 44,624,893 bbls. of crude oil, a decline of 918,177 bbls. from the year before. The year developed considerably more new production than did the previous year. Initial production for the year totaled 227,209 bbls. as compared with a total initial output for the previous year of 185,826 bbls., a gain for 1924 of 41,383 bbls.

Archer County led all other districts in the territory in initial production for the year with a total of 130,239 bbls. Wichita County came second in this respect with 32,316 bbls. and Stephens County ranked third with a total of 21,312 bbls. Reagan County, an entirely new district in the producing column developed initial production during the year to the amount of 13,958 bbls. Wilbarger County, also another new producing district, accounted for a total during 1924 amounting to 11,843 bbls.

In the number of wells completed the year 1924 stands considerably ahead of the previous year. Total completions during the year just closed were 2,814 as compared with 2,666 for the year previous, a gain for 1924 of 148. Of the 2,814 holes drilled last year a total of 1,692 or 60 per cent were producing oil wells, 1,047 or 37 per cent were dry holes and 75 or 3 per cent were listed as gas wells.

High Dry Hole Percentage

Out of the 2,666 wells that were reported as completions in 1923, a total of 1,662 or 62 per cent were oil producers, 861 or 32 per cent were dry holes and 81 were gas wells. The 1,692 oil producers for 1924 gave a new flush production of 227,209 bbls., while the 1,662 oil wells of the previous year accounted for only 185,826 bbls. of new production. The average initial production per well in 1924 was slightly more than 13 bbls., while the average per new well in the previous year was a little short of 112 bbls.

Archer County was the main factor in the North Central Texas fields during the year 1924. Considerably more than 50 per cent of all the wells completed in the territory during the year were in Archer County and likewise considerably more than 50 per cent of all the new production for the year came from that county. During the year Archer County had a total of 1,243 completions out of a total for the whole territory of 2,814. The county gave a total of 130,239 bbls. of initial production. Of the 1,243 completions in the county a total of 854 were oil producers and 389 were dry holes. Average initial production per well in Archer County was a little more than 152 bbls. Due to the fact that during the early part of 1923 Archer County was listed only as a wildcat territory, no comparison can be made with the completions for the two years. However, during the latter half of 1923 the county reported 397 completions, approximately one-fourth of the total number completed in the county during 1924.

Wichita County ranked second in the number of completions during 1924, but that county shows a few less completions and less new production during the year than it accounted for in 1923. During 1924 the county turned in a total of 674 completions as compared with a total for the previous year of 715. There were 421 oil producers completed during the year just closed while 253 of the completions were listed as dry holes, with no gas wells. The 421 new oil wells in Wichita County had a flush production of 32,316 bbls. This is an average per well of a little more than 76 bbls.

In field operations Stephens County also fell short of the mark set in 1923. The year 1924 accounted for only 188 completions in that county as compared with 206 for the previous year. New production was also short of the previous year. Last year there were 21,312 bbls. of new production as compared with 33,967 bbls. for the previous year. Of the 1924 completions in Stephens County, 120 out of the 188 were oil producers, 55 were dry holes and 13 were gas wells. Oil wells completed in that county averaged slightly more than 177 bbls. initial production per well.

In the matter of completions and new production Eastland County was another district that came up short during the year just closed. The county reported only 194 completions in 1924 as compared with 249 in the year previous. New production in Eastland was considerably less than half what it was in 1923. Out of 194 completions in the county, 110 were oil producers, 68 were dry holes and 16 were gas wells. The 110 new oil wells had a flush output of less than 52 bbls. per well. Initial production in the county in 1923 amounted to 13,764 bbls. from 152 oil wells.

Like its neighbors Eastland and Stephens counties, Young County also showed up short in the matter of completed wells and new production during the past year. Young accounted for only 110 completions in 1924 as compared with 159 for the previous year. New production in the county was far short of the year before, being only 1,560 bbls., as compared with 7,597 bbls. for the year 1923.

Out of the 110 completions in the county only 29 were oil producers, 79 being dry holes and 2 being listed as gas wells. The average flush production for each new oil well in the county was approximately 54 bbls. In the previous year the county had a new production of 7,597 bbls. from 70 oil wells, an average per well of a little more than 108 bbls.

Activity of Wildcatters

Some of the wildcat districts were particularly active during 1924 but as a whole they fell far short of the record set the previous year. Completions in the wildcat districts for the year totaled 405 as compared with 940 for the year before, a loss for 1924 of 535. Thus it may be seen that the wildcatters were a little timid in their operations during the year.

The wildcat pools however accounted for a total of 36,133 bbls. of initial production during the year, as compared with 53,257 bbls. for the wildcats in 1923. Of last year's wildcat completions only 158 or 39 per cent were oil wells, 203 or about 50 per cent being dry holes and 44 gas wells. The 158 new oil wells had an average initial output of approximately 228 bbls. This average is considerably higher than in any of the proven districts, due probably to the large completions in Reagan County and the South Vernon Field in Wilbarger County, both of which districts are carried in the wildcat columns.

The fact that the month of June leads in the number of completions would indicate that the greatest activity was along about the middle of the year. There were a total of 339 completions in June, while April ranked second with 333 completions. There were 313 in July and 290 in May. Thus it can be seen that the months of April, May, June and July were the busiest months if wells completed is to be taken as a barometer. Completions by months are as follows: January 165, February 176, March 211, April 333, May 290, June 339, July 313, August 206, September 137, October 216, November 205 and December 223.

December with its 223 completions led all other months in the matter of new production. New production in that month was 30,518 bbls. June with 116 more completions than December had produced only 21,907 bbls. of initial production. April was the second largest month in point of new production with 30,296 bbls. New production by months for the entire year of 1924 follows: January, 11,693 bbls.; February, 12,652 bbls.; March, 15,684 bbls.; April 30,296 bbls.; May, 27,023 bbls.; June, 21,907 bbls.; July, 15,210 bbls.; August, 14,377 bbls.; September, 11,475 bbls.; October, 13,790 bbls.; November, 22,584 bbls.; December, 30,518 bbls.

Development of Archer County

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(Continued on Page 72)

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Iowa Park-K. M. A.	73,036	71,485	84,351	100,890	120,621	142,860	160,766	139,334	132,570	144,398	130,320	122,636	1,422,947
Holiday and Archer County	630,850	707,890	842,518	1,008,480	1,049,381	949,740	965,433	935,394	834,840	975,260	1,150,170	1,312,565	11,362,531
Petrolia	9,052	8,758	8,339	10,050	8,339	8,310	12,276	14,322	11,280	12,276	11,250	11,067	126,319
South Vernon	.....	.....	.....	.....	.....	.....	.....	.....	.....	13,795	122,520	161,696	298,011
Breckenridge	379,967	359,194	377,053	377,010	385,206	346,650	344,689	329,096	303,810	291,121	259,290	250,914	4,004,000
Caddo	141,980	136,590	152,489	171,690	200,260	190,260	218,240	312,753	194,070	179,056	176,220	166,160	2,239,763
Clear Fork	225,618	244,064	332,035	228,810	232,035	258,120	193,254	189,348	180,030	191,456	170,790	155,496	2,501,056
Gunsight	2,108	2,001	2,511	2,190	2,821	2,160	2,728	2,232	2,130	2,077	2,310	2,325	27,593
Ranger-Eastland	264,740	246,471	275,342	264,030	258,075	235,200	237,057	233,430	222,420	238,222	179,010	183,055	2,837,052
Desdemona	93,589	91,060	98,468	105,570	98,425	94,800	97,433	99,417	97,080	92,597	87,930	85,064	1,141,421
Rising Star	3,410	2,958	3,472	3,780	3,038	3,030	2,759	2,883	3,660	2,945	2,850	2,945	37,730
Sipe Springs	7,440	6,061	6,944	6,630	6,820	6,210	7,006	6,231	6,360	5,642	5,940	6,890	77,174
Pioneer	63,860	62,901	70,315	72,000	70,163	61,590	51,274	42,036	33,600	36,053	27,450	26,164	617,206
Brown County	13,857	13,195	13,950	15,480	17,143	19,350	20,367	26,939	27,330	25,451	27,540	26,257	246,869
Callahan County	26,381	24,128	30,814	33,720	43,028	47,280	49,352	48,732	43,500	44,435	48,660	43,360	485,440
Coleman County	3,999	5,858	5,146	4,590	18,166	12,330	1,054	1,581	2,670	3,535	1,620	1,860	62,809
Jack County	1,054	1,247	1,333	1,470	837	1,440	527	1,519	390	1,209	780	775	12,551
Palo Pinto County	4,185	5,220	9,773	5,070	6,448	5,730	4,557	6,727	6,270	9,176	7,680	4,743	76,579
Shackelford County	106,857	107,184	112,654	105,990	121,892	108,180	108,252	107,322	87,870	88,939	75,240	73,346	1,203,726
Regan County	5,160	4,730	5,420	6,100	6,635	10,450	55,955	157,263	158,640	171,740	216,450	262,260	1,060,793
Carson County	.....	.....	.....	.....	31,620	26,460	19,220	32,085	35,070	43,183	33,540	39,295	250,473
Hutchinson County	.....	.....	.....	.....	2,945	4,590	4,185	2,480	2,880	5,115	6,000	5,735	33,930
Mitchell County	26,846	22,620	23,250	25,260	36,704	31,680	46,717	40,796	48,420	50,344	47,340	46,686	446,663
Total 1924	3,359,236	3,280,251	3,595,406	3,767,470	3,983,213	3,787,810	3,840,869	3,929,027	3,577,980	3,746,847	3,844,740	3,912,045	44,624,893
Total 1923	4,311,280	3,316,348	4,175,196	3,595,160	3,823,304	3,940,530	4,778,155	3,496,879	3,227,690	3,990,448	3,178,430	3,202,660	45,043,070
Difference	952,044	36,097	579,790	172,310	159,908	152,720	937,286	432,148	350,290	143,601	666,320	709,385	418,177

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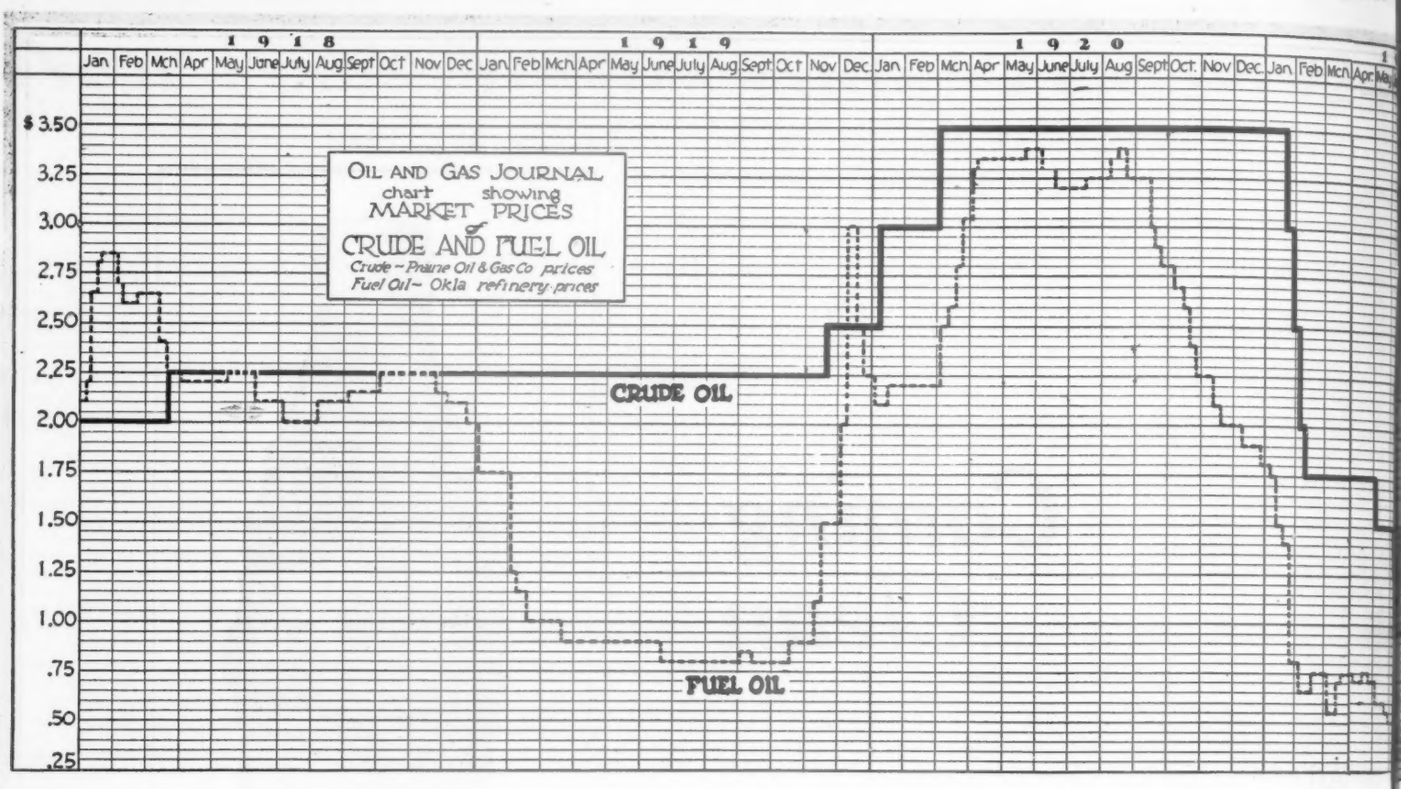
W. L. "Bert" Childs, Vice President and General Manager

Reed Roller Bit Co.

HOUSTON, TEXAS



Date	Price — Crude	Fuel Oil
1918—		
January 1	$2.00	$2.10
January 5	....	2.20
January 10	....	2.65
January 15	....	2.80
January 20	....	2.81
February 4	....	2.70
February 10	....	2.60
February 25	....	2.65
March 12	....	2.40
March 17	....	2.25
March 19	2.25	....
April 2	....	2.20
May 14	....	2.25
June 8	....	2.10
July 4	....	2.00
August 5	....	2.10
September 4	....	2.15
October 3	....	2.25
November 25	....	2.15
December 5	....	2.10
December 20	....	2.00
1919—		
January 2	....	1.75
February 3	....	1.25
February 9	....	1.15
February 20	....	1.00
March 21	....	.90
June 21	....	.80
September 2	....	.85
September 12	....	.80
October 17	....	.90
November 8	....	1.10
November 15	....	1.50
November 20	2.50	....
December 2	....	2.00
December 8	....	3.00
December 16	....	2.50
December 21	....	2.25
1920—		
January 2	....	2.10
January 6	3.00	....
January 16	....	2.20
March 1	3.50	....
March 2	....	2.50
March 12	....	2.60
March 18	....	2.80
March 26	....	3.05
April 3	....	3.30
April 6	....	3.35
May 25	....	3.40
June 7	....	3.30
June 20	....	3.20
July 14	....	3.25
August 6	....	3.35
August 14	....	3.40
August 27	....	3.25
September 13	....	3.00
September 16	....	2.90
September 27	....	2.80
October 8	....	2.70
October 15	....	2.60
October 18	....	2.40
October 28	....	2.25
November 12	....	2.10
November 18	....	2.00
December 10	....	1.90
December 29	....	1.80
1921—		
January 6	....	1.75
January 12	....	1.50
January 20	....	1.40
January 24	3.00	....
January 28	....	.80
January 31	2.50	....
February 4	2.00	.65
February 9	1.75	....
February 19	....	.75
March 4	....	.55
March 14	....	.70
March 21	....	.75
April 3	....	.70
April 16	....	.75
April 20	....	.70
May 2	1.50	....
May 3	....	.60
May 21	....	.55
May 28	....	.50
June 13	1.25	....
June 16	1.00	.40
June 20	....	.35
July 26	....	.40
August 6	....	.45
September 10	....	.47½
September 21	....	.50
October 1	1.25	....
October 6	....	.55
October 7	1.50	....
October 10	....	.80
October 15	....	.90
October 19	....	1.05
October 24	....	.95
November 7	2.00	....
November 8	....	1.25
November 16	....	1.05
November 20	....	.95
December 1	....	.85
December 5	....	.80
December 12	....	.75

NEW POOLS NORTH CENTRAL TEXAS 1924

(Continued From Page 68)

manner crept over the northern boundary of Archer County and several new pools had been discovered. But it remained for the past six months of 1924 to uncover the prolific pools in the southern and southwestern sections of the county.

At least three distinct producing areas were opened up in the southern part of the county during the latter half of the year. They are the Harmel Pool, the Carey Pool and what is generally known as the Knight-Hines Pool. These pools are characteristic of old Wichita Electra country—comparatively small in area, not far distant from each other and rather prolific in output.

The Knight-Hines Pool, sometimes known as the Knight-Hines-Panhandle Pool, was discovered by Bill Knight and Harry Hines late in the month of June, after these operators had drilled probably 15 nonproductive holes in various sections of Archer County. The pool is located in the southern part of the county and the discovery well was drilled on the Ragle land, on the company's B lease. The first well came in on June 25 with an initial production of 175 bbls. from sand at 1,060 feet.

The completion of this well was doubtless the prime factor in the present intensive development in the south Archer area, as prior to this time the greater part of the activities in Archer was confined to the north and central sections of the county. Since the completion of this first producer approximately 35 wells have been completed on this lease and leases adjacent to the discovery well.

It was just three months later that Murchison and others brought in their discovery well on the H. Harmel land to the west of the Knight-Hines discovery and opened up what has come to be known as the Harmel Pool. This well was completed on September 25 with an initial output of 100 bbls. from sand at 1,315 to 1,320 feet. This discovery was in Block 2401 of the T. E. & L. survey of Archer County. To date more than 30 producers have been added to this pool, the wells ranging in initial production from 100 to as high as 400 bbls.

The Carey Pool, in the same general section of Archer County discovered early in the month of October is the most prolific of the three new pools in Archer County. This pool was opened up by Ed Carey, the first well being drilled on the Emil A. Hausler land, Block 16, McCoy survey. The first sand was picked up at around 1,010 feet and made about 100 bbls. initial, but the well was later drilled to a depth of 1,105 feet, where it encountered 20 feet of pay and secured a flush flow of about 600 bbls. These two sands have continued to produce in this pool and wells with a flush output as high as 1,000 bbls. daily have been brought in there.

Wilbarger Springs a Surprise

A year ago Wilbarger County had practically no oil production except that in the extreme eastern part of the county which was carried under the Electra Field, because of its proximity to the old Electra district. But it is different today. Wilbarger County now has a daily production of more than 5,000 bbls. and during the last three months of 1924 produced nearly 300,000 bbls. of oil.

This new production is coming from the South Vernon Pool, just south of the town of Vernon. For nearly five years, at least since the spring of 1920, there have been spasmodic efforts toward the development of a producing area south of Vernon. In the spring of 1920 the Sigler Oil Co. brought in a small well on the Waggoner land about 12 miles south of Vernon, which started a boom that quickly ran its course.

Most of the efforts since that time up until late in August of 1924 had been somewhat disheartening. It was in August that Thelma Wells and others brought in their first good producer south of Vernon. Up until this time only two ordinary producers had been completed in the district. The completion of Wells and others was on the Waggoner land, in Section 84. The first sand was encountered at 1,995 to 2,000 feet and had an initial production of about 200 bbls. Soon after, the well was drilled deeper and a second sand was encountered at 2,015 to 2,030 feet which had a flush flow of about 900 bbls.

The South Vernon Pool, though not fully developed is apparently characteristic of that section of the State. Production is from a true sand and the area is apparently going to be small, though other nearby pools may be developed as drilling is continued. The Texas Co., Sinclair Pipe Line Co., and the Waggoner Refining Co. have all laid pipe lines to the South Vernon Field, assuring an adequate market for all of the production.

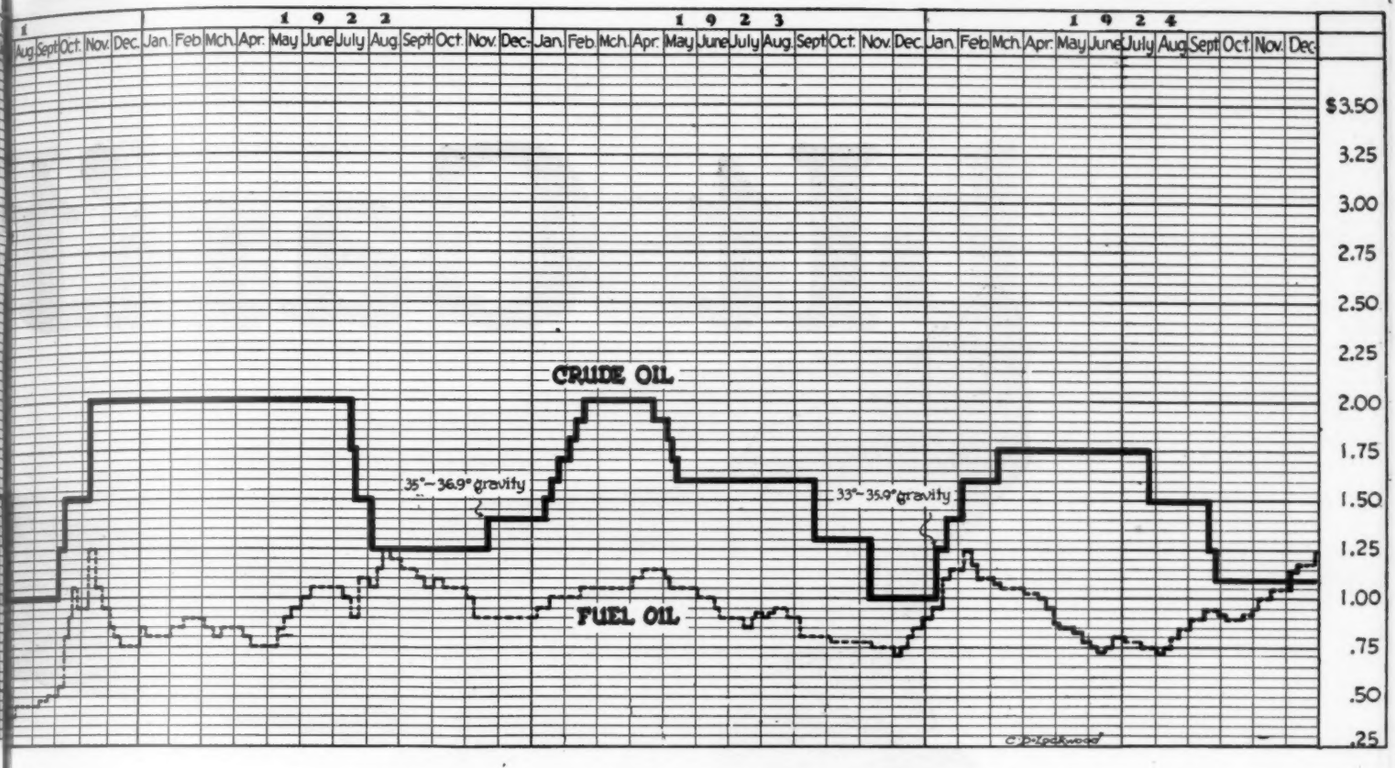
Quiet in Wichita County

Wichita County produced nothing of a sensational nature during 1924. Outside of the usual development in the Electra, Burkburnett and other well established producing areas the county developed nothing of importance with the exception of what is generally known as the Hill-Roberts Pool in the south part of the county. This is not in reality a new producing area as it has been producing from shallow depths for some years, but on March 17 of the year just closed Hill & Roberts, drilling on the Overby tract, encountered a deeper sand at 1,490 to 1,497 feet which produced flush at the rate of 200 bbls. a day. This resulted in an active drilling campaign which developed many good producers in the immediate territory.

Young County

Field development in Young County, which may be characterized as a sort of connecting link between the shallow and semi-shallow districts in the north end of the field and the deep lime producing areas in the south end of the field, was painfully quiet during most of the past year. During the early half of the year there was some little excitement attending the development right around the town of Graham, about the center of the county, but on the whole prospecting there has been rather disappointing.

Several wells were drilled just east of the townsite to the deep levels, around 4,200 to 4,300 feet but so far only small producers or dry holes have been the reward. McGarr and others probably have



1922—		
January 1	....	.85
January 5	....	.80
February 1	....	.85
February 14	....	.90
March 2	....	.85
March 10	....	.80
March 16	....	.85
April 9	....	.80
April 15	....	.75
May 9	....	.85
May 15	....	.90
May 20	....	.95
June 1	....	1.00
June 9	....	1.05
July 8	....	1.00
July 15	1.75	.90
July 18	1.50	....
July 22	....	1.10
August 2	1.25	1.05
August 7	....	1.15
August 14	....	1.25
August 25	....	1.20
September 1	....	1.15
September 15	....	1.10
September 24	....	1.05
October 1	....	1.10
October 10	....	1.05
November 1	....	1.00
November 8	....	.90
November 22 (35°-36.9)	1.40	....
1923—		
January 5	....	.95
January 13	1.50	....
January 17	1.60	1.00
January 27	1.70	....
February 2	1.80	....
February 10	1.90	....
February 15	....	1.05
February 17	2.00	....
April 8	....	1.10
April 14	....	1.15
April 23	1.00	....
May 2	1.80	....
May 5	1.70	1.05
May 12	1.60	....
June 2	....	1.00
June 19	....	.95
June 24	....	.90
July 15	....	.85
July 21	....	.90
July 26	....	.92½
August 1	....	.90
August 6	....	.92½
August 12	....	.95
August 27	....	.90
September 9	....	.80
September 19	1.30	....
October 5	....	.77½
November 8	1.00	....
November 10	....	.75
December 1	....	.70
December 7	....	.75
December 14	....	.80
December 21	....	.85
December 29	....	.90
1924—		
January 8	....	.95
January 9	1.25	....
January 15	....	1.10
January 19	1.40	....
January 22	....	1.15
February 2	1.60	....
February 5	....	1.25
February 12	....	1.17½
February 19	....	1.10
March 4	....	1.07½
March 8	1.75	....
March 11	....	1.05
April 1	....	1.02½
April 15	....	1.00
April 22	....	.95
April 29	....	.87½
May 6	....	.85
May 20	....	.82½
May 27	....	.77½
June 3	....	.75
June 10	....	.72½
June 17	....	.75
June 24	....	.80
June 10	....	.72½
July 1	....	.77½
July 22	....	.75
July 28	1.60	....
August 5	....	.72½
August 12	....	.75
August 19	....	.80
August 26	....	.85
September 2	....	.90
September 16	....	.95
September 17	1.25	....
September 27	1.10	....
September 30	....	.92½
October 7	....	.90
October 21	....	.92½
October 28	....	.95
November 4	....	1.00
November 18	....	1.05
December 2	....	1.15
December 9	....	1.17½
December 30	....	1.25

the best well in this immediate section which is about a 50-bbl. well.

To the west of Graham and over toward the Throckmorton County line both gas and oil were secured at around 2,700 to 2,800 feet but in very limited amounts, so limited in fact that it has never been considered of more than passing importance as a producing district.

During the last two or three months of the year there was some little shallow development in the extreme northern part of the county, north of the town of Olney and up close to the south Archer County line. This of course was due to the success of the south Archer operations. The best completion in that part of the county was the No. 1 Gambrell of Murchison and others, 5 miles northwest of Olney. It was completed late in December with an initial production of 420 bbls. at 1,215 feet. This is a wildcat and may mean the opening of a new producing pool.

The south end of the territory, known generally as the deep lime fields, was also very quiet during 1924. Stephens County had only one new development of importance. It was the work of Critten and others, north of the town of Caddo, where a new and comparatively small area was opened up on the Cobb and Cunningham lands. Production came from the Caddo lime at around 3,200 feet and initial production varied from 400 to 800 bbls.

Eastland County

If anything, development in Eastland County was less sensational than in Stephens County. Early in the year a shallow development started south of the town of Ranger. The sand was found at 1,200 feet and the test had a flush output of about 175 bbls. This area was discovered by the Panhandle Refining Co. on the Gray-Hightower lands.

In both Stephens and Eastland counties the natural gasoline industry has developed until it is of about as much importance as the crude oil business. Both counties are prolific gas producers and the gas is extremely rich in gasoline content.

The counties of Callahan, Shackelford, Throckmorton and Palo Pinto can boast of nothing of more than passing importance during the year 1924. Callahan County has a daily production between 1,500 and 1,600 bbls. This comes principally from wells in the Pioneer-Cross Plains district in the southeast part of the county and from some scattered shallower wells in the northern part of the county. Shackelford developed some good shallow production around the town of Moran and Albany late in 1923 and the early part of 1924, since which there has been nothing of importance developed.

Throckmorton Gives Promise

Throckmorton while it has no importance as an oil producing county now stands in line for some development as soon as crude prices advance and become stabilized at a point that will justify exploration work on a reasonably large scale. The southwest trend of development in southern Archer County bids fair to extend over into northeastern Throckmorton and to advance even further to the central portions of the county. Some considerable drilling was done in the county in 1924 in search of an extension of the Archer County sands.

Palo Pinto County occasionally during the past year accounted for a fairly good completion in the Strawn sand. There were also occasional gas wells brought in, particularly in the southern part of the county.

Importance of Reagan County

The development in Reagan County may be classed as the one outstanding wildcat development of the past year in the North Central Texas territory. It was the only real outlying district that developed anything sensational.

To begin with Reagan County is fully 200 miles from any other oil production of the slightest importance, being that distance southwest of the Ranger territory. In reviewing field developments in Reagan County it might be well to recall that the first production was obtained there in May 1923 by the Texon Oil & Land Co. The first well was drilled about 16 miles west of the town of Big Lake and was known as the Santa Rita well. The oil was found in a sort of sandy lime formation at slightly below 3,000 feet—about 3,028 feet—and initial production was about 130 to 140 bbls. on the pump and flowing by heads.

Shortly after this well was completed and the Texon Oil & Land Co. had started its Nos. 2 and 3 wells, all on lands belonging in fee to the University of Texas, a deal was made with the Big Lake Oil Co. (Benedum & Trees interests) which company took over 16 sections of leases together with the discovery well and the two wells started drilling.

The Big Lake Co. drilled and completed Nos. 2, 3, 4, 5, 6, 7 and 8, all on University lands. Nos. 2, 3, 5 and 6 were small producers, even smaller than the discovery well and Nos. 4, 7 and 8 were dry holes. Then in June of 1924 the No. 9 University of the Big Lake Co. was completed with a production of slightly more than 50 bbls. an hour. About six weeks later No. 10 was drilled in with an initial flow of 1,500 bbls. and then followed No. 11, with about 3,400 bbls. flush, which to date is the largest producer in the field.

To date the field has six of the larger wells, five of which belong to the Big Lake Co. and one to the Texon Oil & Land Co., but all on University lands. The largest production figures show a daily output of 9,225 bbls., but there are no pipe line conections in the field and the market for the crude is somewhat paralyzed. Production would probably be considerably more with adequate pipe line and storage facilities.

The outcome of developments in Reagan County has started a fairly intensive drilling campaign up and down what is known as the Marathon Fold, particularly in the counties of Reagan, Upton, Pecos, Sterling and Glasscock. But to date nothing of importance has developed from this wildcatting.

Texas Panhandle

As yet the Texas Panhandle has not developed into a very important oil producing district. To date the district has developed a daily production of about

(Continued on Page 220)

It Can't U

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For the first time a new patented process makes possible the *preforming* of each wire and strand before it is formed into rope. The result is Tru-Lay, a basically different wire rope with 6 major advantages and a host of important qualities for many wire rope uses. The invention of the Tru-Lay process is perhaps the greatest improvement in wire rope making since the first wire was twisted into strands.

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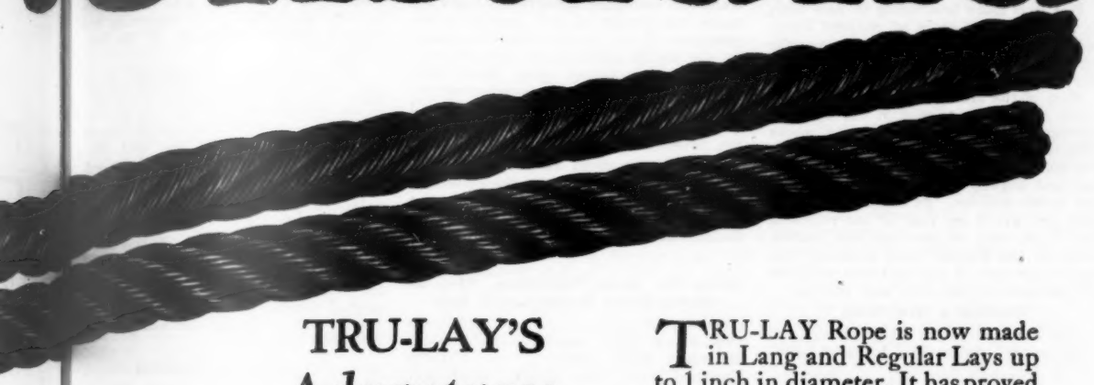

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Motor Growth and Gasoline Demand

Survey of the Number of Cars and Trucks, Refining Capacity and Consumption of Motor Fuel by Areas and Nationally at Beginning of 1925

By Charles E. Bowles

We built 193,000 miles of railroad in the United States—or 77 per cent of our total mileage—to the close of the year 1900. At that time there were 13,824 motor vehicles registered in the United States.

In the intervening 24 years we have built about 58,000 miles of railroad—and increased our motor vehicle registration to over 17,730,000.

Referring to the accompanying map, which divides the United States into four great areas, and to the table which shows the percentages of population, cars and trucks, etc., in each, it will be noted that, from the standpoint of size, the Eastern and Mississippi Valley areas are about the same size, each representing about 30 per cent of the total of the United States. It will also be noted that the Rocky Mountain and the Pacific Coast areas are about the same size, each being about 20 per cent of the total.

It is interesting to note that 70 per cent of our population lives east of the Mississippi—about 22 per cent in the Mississippi Valley area—less than 3 per cent in the Rocky Mountain area—and less than 6 per cent in the Pacific Coast area.

But it is more interesting to note how, in more than 80 years of railroad building and about 25 years of automobile and truck building we have worked out our transportation problem.

East of the Mississippi River there are today about 49 per cent of our railroad mileage and 63 per cent of our motor vehicles. In the Mississippi Valley area are about one-third of our railroad mileage and slightly less than one-fourth of our motor vehicles. In the Rocky Mountain area are 8 per cent of our railroads and 3 per cent of our cars and trucks, while in the Pacific Coast area are less than 9 per cent of our railroads and over 10 per cent of our cars and trucks.

Entering a New Cycle

The automobile, the motor truck and "good roads" are rapidly bringing about fundamental changes in both the operating problems and the earning power of our steam railways. We are today in the early part of a new cycle in railroad administration. And the changes in equipment and operation have been almost entirely the result of the marvelous developmnt of the motor vehicle industry. In the last 10 years more miles of track have been abandoned than have been built—and in all new railroad construction, from now on, the automobile and the motor truck will be coordinated with the passenger coach and the freight car.

In searching about for the basic stabilization factors upon which the motor vehicle and the petroleum industries are resting, the answer is found in the "individualized transportation" afforded by the automobile and the motor truck. The motor vehicle industry merely took the basic idea of transportation upon which the railroads had spent more than 80 years of time and more than $20,000,000,000 in money and pushed it a step further by bringing its ownership and control within the reach of the individual.

The motor vehicle registration at the close of 1924 (approximately 17,730,000) is an increase of more than 16 per cent over 1923—and 1923 showed an increase of more than 22 per cent over 1922, which showed an increase of 18 per cent over 1921.

In the five years since the close of 1919 motor vehicle registration has doubled—and the cycle of stable industrial conditions into which it seems our country is now entering, is the best foundation for believing that, for at least the next several years, the average increase in motor vehicle registration will be about 2,000,000 a year.

Growth of Registration

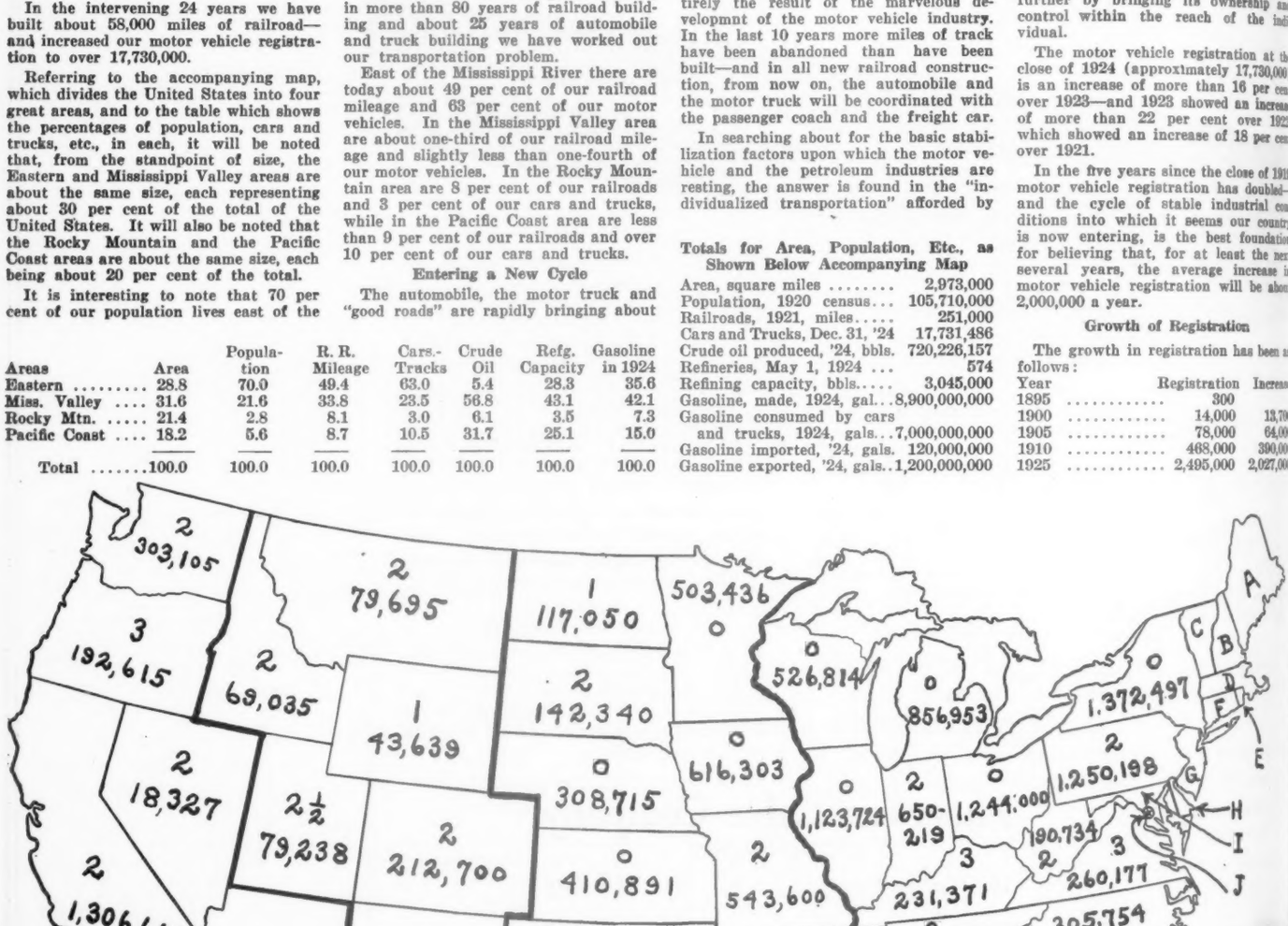
The growth in registration has been as follows:

Year	Registration	Increase
1895	300	
1900	14,000	13,700
1905	78,000	64,000
1910	468,000	390,000
1925	2,495,000	2,027,000

Areas	Area	Population	R. R. Mileage	Cars.-Trucks	Crude Oil	Refg. Capacity	Gasoline in 1924
Eastern	28.8	70.0	49.4	63.0	5.4	28.3	35.6
Miss. Valley	31.6	21.6	33.8	23.5	56.8	43.1	42.1
Rocky Mtn.	21.4	2.8	8.1	3.0	6.1	3.5	7.3
Pacific Coast	18.2	5.6	8.7	10.5	31.7	25.1	15.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Totals for Area, Population, Etc., as Shown Below Accompanying Map

Area, square miles	2,973,000
Population, 1920 census	105,710,000
Railroads, 1921, miles	251,000
Cars and Trucks, Dec. 31, '24	17,731,486
Crude oil produced, '24, bbls.	720,226,157
Refineries, May 1, 1924	574
Refining capacity, bbls.	3,045,000
Gasoline, made, 1924, gal.	8,900,000,000
Gasoline consumed by cars and trucks, 1924, gals.	7,000,000,000
Gasoline imported, '24, gals.	120,000,000
Gasoline exported, '24, gals.	1,200,000,000



Pacific Coast

Area, square miles	542,000
Population	5,978,000
Cars and Trucks	1,878,818
Crude Oil, Bbl.	230,045,000
Refineries, number	88
Refineries, capacity	764,000
Gasoline, made, gal.	1,332,000,000
Est. Consumption	750,000,000

Rocky Mountain

Area, square miles	635,000
Population	2,924,000
Cars and Trucks	526,216
Crude Oil, bbl.	42,510,576
Refineries, number	27
Refineries, capacity	108,000
Gasoline, made, gal.	648,000,000
Estimated Consumption	200,000,000

Mississippi Valley

Area, square miles	941,000
Population	22,788,000
Cars and Trucks	4,169,472
Crude Oil, bbl.	408,567,442
Refineries, number	312
Refineries, capacity	1,313,000
Gasoline, made, gal.	3,750,000,000
Estimated Consumption	1,650,000,000

East of Mississippi

Area, square miles	856,000
Population	74,000,000
Cars and Trucks	11,156,975
Crude Oil, bbls.	38,113,200
Refineries, number	147
Refineries, capacity	880,000
Gasoline, made, gal.	3,170,000,000
Estimated Consumption	4,400,000,000

1920	9,206,000	6,711,000
1924	17,731,000	8,525,000

Reducing the above increases to a yearly basis we find that from

1895 to 1900 average	increase	2,740
1901 to 1905 average	increase	12,800
1906 to 1910 average	increase	78,000
1911 to 1915 average	increase	395,400
1916 to 1920 average	increase	1,352,200
1921 to 1924 average	increase	2,131,000

In talking about the "saturation point" for motor vehicles we have been discussing it in terms of the relation between motor vehicles and population. The real limiting factor, however, is primarily "purchasing power," with population secondary—if not incidental.

And as purchasing power and stable industrial conditions go hand in hand, there is every reason to believe that at the close of 1925 the motor vehicle registration will be close to 20,000,000—that by the close of 1926 it will be about 22,000,000—and by the close of 1928 it will have passed 25,000,000.

In the four years from January, 1921, to December, 1924, the registration increased over 8,500,000. If from January, 1925 to December, 1928, it increases 7,300,000, the 25,000,000 mark will have been passed. And present industrial conditions amply justify both the motor vehicle industry and the oil industry in anticipating at least that registration at that time.

Consumption per Car

On the basis of 400 gallons of gasoline per car per year, the 1928 requirement for motor vehicles alone would be about 10,000,000,000 gallons. Other industries have been using on an average of about 10 per cent of our annual production. This would call for about 1,000,000,000 gallons in addition to the motor vehicle requirements. Over the last five years our exports have averaged over 10 per cent a year, with about 13 per cent in 1924. If our exports represent about 10 per cent of the total demand (domestic demand plus exports) they will call for 1,200,000,000 gallons in 1928. They were 1,200,000,000 gallons in 1924.

On the above basis the oil industry could anticipate that the combined demand of industries for gasoline in 1928 would be about as follows:

	Gallons
For motor vehicle industry	10,000,000,000
For other domestic industries	1,000,000,000
For export	1,200,000,000
Total	12,200,000,000

To make this gasoline in 1928, on the basis of an average refinery recovery of

	Bbls. Crude
35% would require	830,000,000
40% would require	720,000,000
50% would require	580,000,000

While the above figures seem stupendous, they are based upon a smaller percentage of growth in the next four years than the motor vehicle industry has had during the yast four years.

Turning from the market to the raw material we find that in 1924 the area east of the Mississippi produced 5.4 per cent of the total crude oil output of the United States. Refineries in this area represented 28.3 per cent of the total refining capacity, and made 35.6 per cent of all of the gasoline. In other words with about one-twentieth of the crude oil production and one-fourth of the refining capacity, these refineries made one-third of the country's output of gasoline in 1924.

On the other hand, the Mississippi Valley area produced 56.8 per cent of the crude, had 43.1 per cent of the refining capacity and made 42.1 per cent of the gasoline.

In 1924 the Mississippi Valley area produced more than 10 times as much crude oil as the eastern area. It produced over a half-billion gallons more gasoline than the eastern area. And yet, the eastern area furnished 63 per cent of the motor vehicle market for gasoline compared with 23.5 per cent in the Mississippi Valley.

Refining Capacity

Referring to the figures below the map aggregate capacity of over 1,300,000 bbls. it will be noted that in the Mississippi Valley area there are 312 refineries with a day. In the eastern area there are 147 refineries with an aggregate capacity of about 860,000 bbls. a day.

The refineries in the Mississippi Valley area made approximately 3,750,000,000 gallons of gasoline in 1924 and the motor vehicles consumed approximately 1,650,000,000 gallons. This left a surplus of something like 2,000,000,000 gallons of gasoline in this area, a part of which was used by other industries and a larger part of which as consumed outside of this area. On December 31, 1924, the aggregate stocks of gasoline in the Mississippi Valley were about the same as on January 1, 1924, hence the above surplus, about 2,000,000,000 gallons must have found a market outside of its own territory.

On the other hand the refineries east of the Mississippi made about 3,179,000,000 gallons of gasoline in 1924 and the motor vehicles in this area consumed about 4,400,000,000 gallons. In other words this area consumed about 1,250,000,000 gallons more gasoline than it produced.

It is a rather interesting situation when a large area produces about 5 per cent of the country's crude oil, makes over a billion gallons less gasoline than it consumes within its own boundaries and at the same time exports hundreds of millions of gallons to foreign countries whose trade it controls.

Adding the gasoline produced in these two areas gives a total of about 6,900,000,000 gallons—and adding the estimated motor vehicle consumption gives a total of about 6,000,000,000 gallons. Under reasonably normal conditions and in the broad view of the industry the eastern and the Mississippi Valley areas have functioned as a unit, the surplus crude and the surplus gasoline from the latter area making up a large part of the shortage of the former area.

Western Areas

In the Rocky Mountain area there are 27 refineries with an aggregate capacity of about 108,000 bbls. a day. In 1924 these refineries made about 648,000,000 gallons of gasoline while the motor vehicles consumed about 200,000,000 gallons, leaving a surplus of around 400,000,000 gallons available for other markets.

In the Pacific Coast area there are 88 refineries with an aggregate capacity of over 760,000 bbls. a day. In 1924 these refineries made over 1,300,000,000 gallons of gasoline and the regional consumption was probably about 750,000,000 gallons. On December 31,1924, the stock of gasoline in this area was about 100,000,000 gallons more than on January 1, 1924. Obviously something like 400,000,000 gallons of gasoline were available for other industries and for export, a part of which found its way to countries bordering on the Pacific Ocean and a part of which went through the Panama Canal. These latter shipments came into competition with similar cargoes from Gulf Coast and Atlantic seaboard points.

In the aggregate, the problem confronting the eastern area is to get enough gasoline to take care of its local and foreign markets.

And, in the aggregate, the problem confronting the Mississippi Valley, Rocky Mountain and the Pacific Coast areas is to find a market for their surplus gasoline.

Viewed as a world industry, the supply of and the demand for gasoline just about "balanced" in 1924 as the following estimates show:

	Gallons
Stock January 1, 1924	1,075,000,000
*Domestic production	8,900,000,000
*Imports	120,000,000
	10,095,000,000
*Exports	1,200,000,000
*Domestic consumption	7,800,000,000
*Stock, December 31, 1924	1,095,000,000
*Estimated	10,095,000,000

The supply (production plus imports) was about 9,020,000,000 gallons; while the demand (consumption plus exports) was about 9,000,000,000 gallons. Hence, on January 1, 1925, the total gasoline in storage in the United States was about the same as on January 1, 1924 or slightly over 1,000,000,000 gallons.

Taxes on Gasoline

Referring to the map it will be noted that of the 26 States east of the Mississippi, 18 tax gasoline, the District of Columbia having a 2-cent tax. In these 18 States and the District of Columbia, there were approximately 4,760,000 cars and trucks registered at the close of 1924.

In the eight States that did not tax gasoline there were approximately 6,400,000 cars and trucks. Hence of the total registration east of the Mississippi at the close of 1924 (approximately 11,160,000) over 57 per cent of the cars and trucks were in States without a gasoline tax.

In the Mississippi Valley area, in 1924, there were 6 States with a gasoline tax and 5 without. Although Missouri had no State tax, the cities of St. Louis, Kansas City, Springfield and St. Joseph, taxed gasoline, thereby reaching probably 40 per cent of the cars and trucks in the State.

In the Mississippi Valley area the gasoline used by slightly over 2,000,000 cars and trucks was taxed while the gasoline used by about 2,100,000 cars and trucks in Minnesota, Iowa, Nebraska, Kansas and Missouri (with the above exceptions) was not taxed. However, a 2-cent State tax went into effect in Missouri January 1, 1925.

In the Rocky Mountain area all of the States tax gasoline. This is also true of all the States in the Pacific Coast area.

Separating the cars and trucks in the States that tax gasoline from those in States with no tax we find that of the total registration at the close of the year about 9,190,000 were paying a tax on the gasoline they used while about 8,541,000 used tax-free gasoline. January 1, 1925 there were 12 States without a gasoline tax. On January 1, 1926, it is probable that very few States will be left in the "tax-free" column.

Demand Increasing

In 1924 the motor vehicle industry asked for about 7,000,000,000 gallons of gasoline. In 1925 the increase in registration alone will call for about one billion gallons more than were used in 1924. And in 1926 the additional registration will call for another increase of a billion gallons. With the practical certainty that in 1925 the motor vehicle industry alone will call for 8,000,000,000 gallons and in 1926 for close to 9,000,000,000 gallons and in 1928 at least 10,000,000,000 gallons, the problem of a "market," in that amount, is solved by the motor vehicle industry.

It is undeniably true that the oil industry has seldom received for its gasoline a price that represented its real intrinsic value to other industries. And, unfortunately for itself, the refining branch has been the victim of its own "super-efficiency" which, along with an abnormal production of crude oil, has robbed it of the legitimate profits to which the "essential value" of its products entitled it. And it will be most unfortunate if it continues to make just enough too much gasoline to keep the market either just at or below the profit-making point.

PRODUCTION OF AUTOMOBILES IN 1924 SECOND LARGEST IN HISTORY

By L. M. Fanning

Production of motor cars and trucks in the United States in 1924, according to preliminary figures of the National Automobile Chamber of Commerce, totaled 3,650,000 compared with 4,086,997 the preceding year, a decrease of 436,977 vehicles, or 10 per cent. This is the first decrease recorded since 1921. However, 1923 established a new high record and 1924 was not far behind it, the latter year being the second largest from the angle of output in the history of the industry. During the last three years motor vehicles on the road have increased by 6,500,000.

The increasing popularity of closed models, which are making possible larger use of cars during the winter months, is shown in the following table of percentages:

Per Cent of Closed Models in Motor Car Output

	Per Cent		Per Cent
1915	1.5	1920	17.0
1916	1.5	1921	22.0
1917	4.0	1922	30.0
1918	7.0	1923	34.0
1919	10.0	1924	39.0

Further interesting data relating to the automobile industry for 1924 and issued by the National Automobile Chamber of Commerce, follows: Tire production, 45,000,000; wholesale value of motor vehicle tire business, $627,697,000; total value of parts and accessories, exclusive of tires, $872,838,000; average retail price of car, $814; average retail price of truck, $1,026; number of persons employed in motor vehicle and allied lines,

(Continued on Page 204)

ANNUAL PRODUCTION OF MOTOR VEHICLES

Passenger Cars			Motor Trucks		
Year	Number	Wholesale Val.	Year	Number	Wholesale Val.
*1899	2.700	$4,750,000	*1904	411	$946,947
*1904	21.281	23,634,367	*1909	3.255	5,230,028
*1909	127.731	159,918,506	1903-1910	10.374	20,485,500
1910	181.000	213,000,000	1911	10.655	22,292,321
1911	199.319	240,770,000	1912	22.000	43,000,000
1912	356.000	335,000,000	1913	23.500	44,000,000
1913	461.500	399,902,000	*1914	25.375	45,098,464
*1914	543.679	413,859,379	1915	74.000	125,800,000
1915	818.618	565,978,950	1916	90.000	157,500,000
1916	1,493,617	797,469,353	†1917	128,157	220,982,668
†1917	1,740,792	1,053,505,781	†1918	227,250	434,168,992
†1918	926,388	801,937,925	1919	316,364	423,326,621
1919	1,657,652	1,461,785,925	1920	322,039	423,756,715
1920	1,883,158	1,808,170,963	1921	147,550	166,082,000
1921	1,514,000	1,093,918,000	1922	252,668	222,635,324
1922	2,406,396	1,567,003,041	1923	392,760	311,144,434
1923	3,694,237	1,693,808,282	x1924	370,000	284,556,000
x1924	3,280,000	1,994,540,000			

Total Cars and Trucks					
Year	Number	Wholesale Val.	Year	Number	Wholesale Val.
*1899	3.700	$4,750,000	1913	485.000	$425,000,000
1903	11.000	12,650,000	*1914	569.054	458,957,843
*1904	21.975	30,864,616	1915	892,618	691,778,950
1905	25.000	40,000,000	1916	1,583,617	954,969,353
1906	34.000	52,900,000	†1917	1,868,949	1,274,458,449
1907	44.000	93,400,000	*†1918	1,153,638	1,236,106,917
1908	65.000	137,800,000	1919	1,974,016	1,885,112,546
*1909	130.986	165,148,529	1920	2,205,197	2,232,927,628
1910	187.000	225,000,000	1921	1,661,550	1,260,000,000
1911	210,000	262,500,000	1922	2,659,064	1,789,638,385
1912	378.000	378,000,000	‡1923	4,086,997	2,004,952,716
			x1924	3,650,000	2,279,096,000

*From U. S. Census reports.
†Production figures compiled by Automotive Products Section. War Industries Board, from sworn statements by manufacturers.
‡Figures as in previous years include production of plants located in Canada, making motor vehicles of U. S. design. Output figures for these plants are: 1920, 94,144; 1921, 66,246; 1922, 101,007; 1923, 148,791.
xEstimated.

Closed Cars Gain

The percentage of closed cars produced in 1924 continued to increase. It is estimated that of the total production of 3,280,000 cars in 1924, 1,300,000 or 39 per cent, were closed cars. In 1923, of the total production of 3,694,237 cars, 1,259,877, or 34 per cent, were closed.

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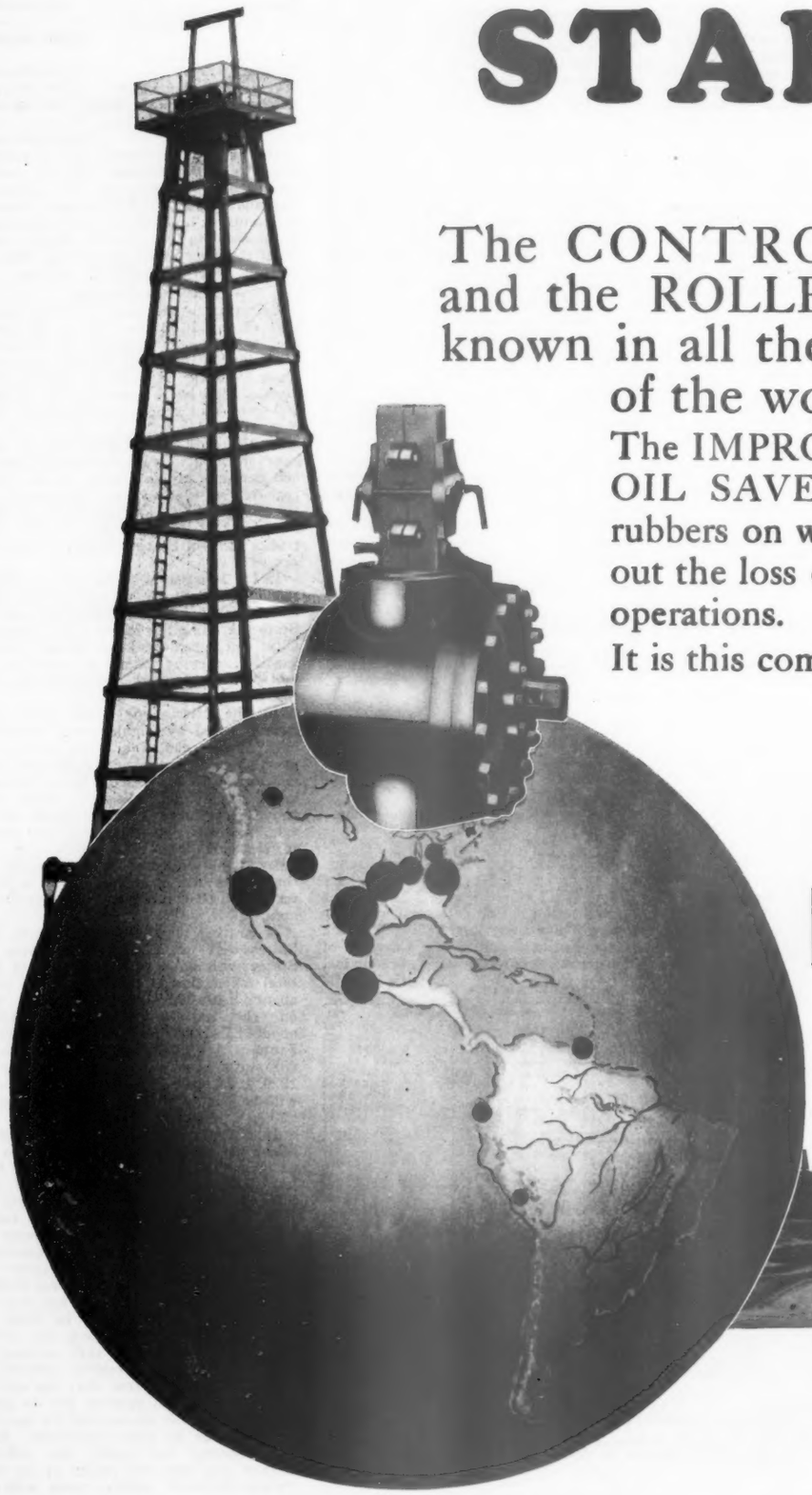

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Automobile Registration 17,731,486

Official Figures From Various States Show Increase of 16.5 Per Cent Over 1923. South Leads in Gain

Registration of passenger automobiles and motor trucks in the United States in 1924 totaled 17,731,486, an increase of 2,508,828 or 16.5 per cent over 1923. This compares with a gain of 2,922,888 in 1923 over 1922, or 23.8 per cent. The figures were obtained by The Oil and Gas Journal by telegraph from the Secretaries of State and directors of motor vehicle registration bureaus of the various States and the District of Columbia. In addition to the passenger cars and trucks there were 150,749 motorcycles registered in the different states.

Massachusetts registered the greatest gain during 1924, the number of passenger cars and trucks in that state increasing from 476,150 in 1923 to 672,315 in 1924, or 41.2 per cent. Losses shown by Maryland and the District of Columbia, may be explained by the fact that until 1924 there was not any reciprocity agreement in effect between them and it was necessary for thousands of persons residing in Washington to take out licenses in Maryland and as many more who lived in Maryland to procure licenses in the District of Columbia.

South Leads in Increase

An interesting coincidence is the fact that the five states leading in 1924 were also the leaders in 1923 and in each year their total percentage of the entire registration for the United States was the same—35.5 per cent. These States—New York, California, Pennsylvania, Ohio and Illinois—had 6,297,088 passenger automobiles and motor trucks registered on December 31, 1924, or 35.5 per cent of the total for the whole country and at the same time in 1923 they had 5,417,580 registrations or 35.5 per cent of the total for the country iin 1923.

Another interesting feature of the registrations for 1924 is the fact that large farming states, such as Iowa, Nebraska, Kansas, Oklahoma, Minnesota and Missouri showed a less average gain than did the entire country as a whole. Mississippi, with a gain of 28.8 per cent over 1923, was next to Massachusetts; Louisiana coming third with a gain of 28.5 per cent; Arkansas, fourth with an increase of 27.7 per cent and South Carolina, fifth with a gain of 26.9 per cent. The South, consequently, was in the lead in the states showing the greatest increase last year as compared to the previous year.

It is estimated there were 3,650,000 passenger cars and motor trucks manufactured during 1924, of which 3,280,000 were cars and 370,000 trucks. The passenger cars had a value estimated at $1,994,540,000 and the trucks, $284,556,000. This compares with 3,604,237 passenger cars and 392,760 trucks manufactured in 1923 but the value of the motor vehicles made in 1923 was less than those manufactured in 1924, the 1923 passenger cars being worth $1,693,808,282 and the trucks $311,144,434.

Compilations found to be approximately correct estimate the average annual consumption of passenger cars and trucks at 400 gallons per car. On this basis, the cars registered on December 31, 1924, would consume 7,092,594.400 gallons of gasoline per year as against a consumption of 6,089,063,200 gallons for the cars registered the year previous.

Marketing Areas

The relative position of the 10 marketing areas covering the entire United States did not materially change during 1924, in regard to automobile registrations. The Standard Oil Company of Indiana territory comprising 10 states in the Middle West, was the only area which varied 1 per cent from its percentage of 1923. This territory in 1924 had 30.9 per cent of all the motor vehicles registered in the United States, a loss of 1 per cent from 31.9 per cent figure for 1923. As shown in the accompanying table, this territory still has more than double the number of registrations of any other marketing territory in the United States.

The Standard of New York, which in this table includes all of New England and New York, made the largest percentage gain. Its percentage in 1923 was 14.2 per cent and in 1924, 14.7 per cent.

In the adjacent table the marketing areas are divided as follows: Standard of Indiana—Illinois, Iowa, Wisconsin, Minnesota, Indiana, Michigan, North Dakota, South Dakota, Missouri and Kansas; Standard of New Jersey—Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina; Atlantic Refining Co.—Pennsylvania and Delaware; Standard of California—Nevada, California, Oregon, Washington and Arizona; Standard of Kentucky—Georgia, Alabama, Mississippi, Florida, Kentucky; Magnolia Petroleum Co.—Texas, Oklahoma; Continental Oil Co.—Wyoming, New Mexico, Utah, Colorado, Montana, Idaho; Standard of New York—New York, Connecticut, Maine, New Hampshire, Vermont, Massachusetts; Standard of Louisiana—Louisiana and Tennessee; Standard of Ohio—Ohio; Standard of Nebraska—Nebraska.

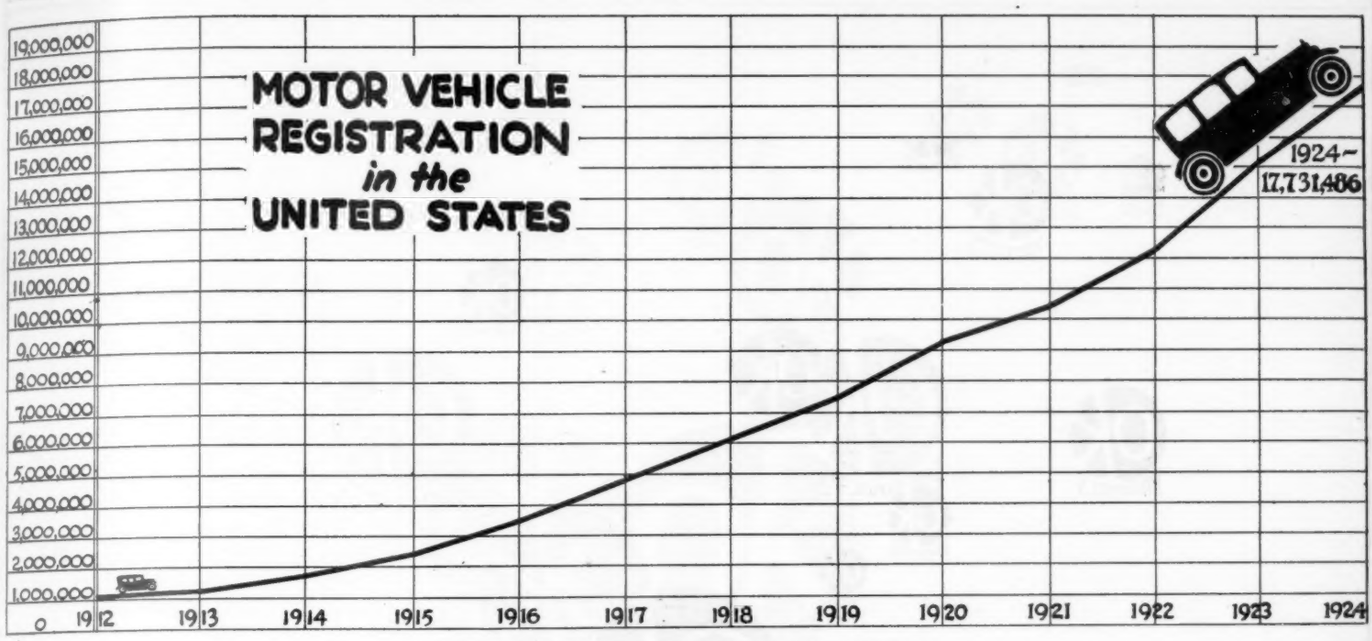
AUTOMOBILE REGISTRATIONS BY MARKETING AREAS

	Total 1924 Registrations	Percentage	Total 1923 Registrations	Percentage
Standard of Indiana	5,491,330	30.9	4,858,118	31.9
Standard of New Jersey	1,722,231	9.7	1,501,618	9.8
*Atlantic Refining Co.	1,285,334	7.2	1,094,601	7.2
Standard of California	1,878,818	10.6	1,592,360	10.4
Standard of Kentucky	927,950	5.2	763,183	5.0
Magnolia Petroleum Co.	1,349,137	7.6	1,107,845	7.3
Continental Oil Co.	526,216	2.9	463,156	3
Standard of New York	2,616,260	14.7	2,175,559	14.2
‡Standard of Louisiana	381,495	2.1	311,865	2.0
Standard of Ohio	1,244,624	7.0	1,064,624	6.9

*Pennsylvania and Delaware.
‡Does Not Include Arkansas.

State—	Registration 1924 Passenger cars	Trucks	Motorcycles	Total Motor Vehicle Registration 1924*	Registration 1923*	Per Cent Gain
Alabama	138,574	18,688	540	157,262	126,642	24.2
Arizona	50,509	7,595	372	58,104	48,741	19.2
Arkansas	126,000	17,000	300	143,000	111,946	27.7
California	1,114,373	192,294	12,240	1,306,667	1,100,283	18.7
Colorado	196,500	16,200	2,200	212,700	189,356	12.3
Connecticut	181,115	34,090	3,889	215,205	177,931	20.9
Delaware	29,075	6,061	325	35,136	29,977	17.2
District of Columbia	91,905	9,916	1,889	101,821	103,171	1.3†
Florida	163,036	34,191	733	197,227	160,000	23.2
Georgia	181,268	26,275	750	207,543	173,794	19.4
Idaho	61,423	7,612	620	69,035	62,379	10.6
Illinois	982,916	140,808	6,873	1,123,724	969,331	15.9
Indiana	566,608	83,611	4,822	650,219	583,342	11.4
Iowa	573,966	42,337	2,580	616,303	576,398	6.9
Kansas	370,951	39,940	1,632	410,891	375,594	9.4
Kentucky	208,096	23,275	724	231,371	198,347	11.1
Louisiana	150,900	27,100	512	178,000	138,500	28.5
Maine	108,602	19,364	1,296	127,966	108,609	17.8
Maryland	185,398	11,183	2,459	196,581	209,938	6.3†
Massachusetts	580,489	91,826	10,778	672,315	476,150	41.2
Michigan	774,316	82,637	1,948	856,953	730,658	17.3
Minnesota	465,613	37,823	3,080	503,436	448,187	12.3
Mississippi	121,092	13,455	110	134,547	104,400	28.8
Missouri	491,988	51,612	2,164	543,600	476,373	14.1
Montana	69,824	9,871	293	79,695	73,828	7.9
Nebraska	277,449	31,266	1,342	308,715	286,053	7.9
Nevada	18,327	----‡	--‡	18,327	15,700	16.7
New Hampshire	64,037	7,242	1,750	71,279	59,971	18.9
New Jersey	393,795	109,987	8,053	503,782	430,958	16.9
New Mexico	40,513	1,396	227	41,909	31,737	32.1
New York	1,136,526	235,973	20,935	1,372,499	1,214,642	13.0
North Carolina	278,346	27,408	1,029	305.754	247,612	23.4
North Dakota	112,368	4,682	509	117,050	109,244	7.1
Ohio	1,086,000	158,000	14,700	1,244,000	1,068,700	16.4
Oklahoma	348,425	26,000	735	374,425	307,000	22.0
Oregon	177,558	15,057	2,764	192,615	166,412	15.7
Pennsylvania	1,065,303	184,895	17,909	1,250,198	1,064,624	17.4
Rhode Island	78,160	17,247	1,428	95,407	85,480	11.6
South Carolina	147,530	15,852	488	163,382	128,656	26.9
South Dakota	131,190	11,150	305	142,340	131,720	8.0
Tennessee	182,882	20,613	699	203,495	173,365	17.3
Texas	764,270	67,442	2,634	831.712	688,899	20.7
Utah	69,382	9,856	731	79,238	66,025	20.0
Vermont	57,482	4,107	779	61,589	52,776	16.7
Virginia	227,525	32,652	1,800	260,177	219,092	18.7
Washington	260,919	42,186	3,183	303.105	261,224	16.0
West Virginia	168,563	22,171	1,407	190,734	162,191	17.6
Wisconsin	526,814	----‡	3,961	526,814	457,271	15.2
Wyoming	38,831	4,808	252	43,639	39,831	9.6
Total	15,636,732	2,094,754	150,749	17,731,486	15,222,658	16.5

*Does not include motorcycles.
†Decrease.
‡Not segregated.



MOTOR VEHICLE REGISTRATION—1912 TO 1924, INCLUSIVE

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Alabama	3,385	5,435	8,078	11,925	21,636	32,873	46,171	58,898	74,637	82,343	90,053	126,642	157,262
Arizona	1,624	3,098	5,040	7,318	13,124	19,890	23,905	28,979	34,559	35,049	38,034	48,741	58,104
Arkansas	2,250	3,000	5,642	8,021	15,000	28,693	41,458	49,450	59,082	67,446	86,426	111,946	143,000
California	88,699	60,000	123,516	163,795	232,440	306,916	364,800	477,450	568,892	673,830	861,805	1,100,282	1,306,667
Colorado	8,950	13,135	17,756	27,568	43,296	66,850	83,244	104,865	128,549	145,739	162,328	189,356	212,700
Connecticut	24,101	27,189	33,009	43,985	61,855	85,724	92,605	109,651	119,134	137,526	154,675	177,931	215,205
Delaware	1,732	2,350	3,050	4,657	7,102	10,700	12,955	16,152	18,300	21,413	24,560	29,977	35,136
District of Columbia	1,732	2,373	4,833	8,009	13,118	16,493	30,490	35,400	39,712	61,746	85,435	103,171	101,821
Florida	1,749	2,372	3,368	10,850	20,718	27,000	54,186	55,400	73,914	97,837	115,891	160,000	197,227
Georgia	19,120	18,500	20,916	25,671	47,579	70,357	99,800	127,326	144,422	131,942	145,584	173,794	207,543
Idaho	2,500	2,173	3,346	7,071	12,999	24,758	32,289	42,220	40,873	51,264	63,874	62,379	69,035
Illinois	68,073	94,656	131,140	180,832	248,429	340,292	389,620	478,438	568,759	670,434	786,190	969,331	1,123,724
Indiana	54,334	47,000	66,400	96,915	139,317	192,192	227,160	277,255	332,707	400,342	469,939	583,342	650,219
Iowa	47,188	75,088	112,134	152,134	198,602	254,317	278,313	363,857	437,300	460,528	500,148	576,398	616,302
Kansas	22,000	34,366	49,374	72,520	112,122	159,343	189,163	227,752	265,396	291,309	327,194	375,594	410,891
Kentucky	5,147	7,210	11,746	19,500	31,700	47,416	65,870	90,641	112,685	126,371	154,021	198,347	231,371
Louisiana	7,000	7,200	12,000	11,380	17,000	28,394	40,000	51,000	66,000	80,500	102,284	138,500	178,000
Maine	7,743	10,570	15,700	21,545	30,972	41,499	40,372	53,426	62,907	77,527	93,000	108,600	127,966
Maryland	10,427	14,254	20,213	31,047	44,245	60,943	74,666	95,634	116,341	140,572	165,624	209,938	196,581
Massachusetts	50,132	62,660	77,246	102,633	136,809	174,274	193,497	247,183	304,631	360,732	385,231	476,150	672,315
Michigan	39,579	54,366	76,389	114,845	160,052	226,693	262,125	325,813	412,717	477,037	578,980	730,658	856,953
Minnesota	29,000	37,800	67,862	93,269	46,000	54,009	204,458	259,743	309,569	328,700	380,557	448,187	503,426
Mississippi	2,895	3,000	5,964	9,669	25,000	36,600	48,400	45,030	63,484	65,139	77,001	104,400	134,547
Missouri	24,379	38,140	54,468	76,462	103,587	147,528	188,040	244,363	296,919	346,437	392,969	476,373	543,600
Montana	2,000	5,686	10,172	14,499	24,440	42,696	51,037	59,325	60,646	58,785	62,649	73,828	79,695
Nebraska	33,861	25,617	40,929	59,140	100,534	148,101	176,101	192,000	223,000	238,704	256,654	286,053	308,715
Nevada	900	1,131	1,487	2,009	4,919	7,160	8,159	9,305	10,464	10,819	12,647	15,700	18,327
New Hampshire	5,764	7,420	9,571	13,499	17,508	22,267	24,817	31,625	34,680	42,039	48,293	59,571	71,279
New Jersey	43,056	48,892	60,247	78,232	104,341	134,964	155,519	190,873	227,737	272,994	341,626	430,958	503,782
New Mexico	911	1,721	2,945	5,100	8,228	8,457	15,000	18,077	22,109	24,703	25,473	31,737	41,909
New York	107,262	134,405	169,966	234,032	317,866	411,567	463,758	571,662	669,290	812,031	1,002,293	1,214,643	1,372,499
North Carolina	6,178	10,000	14,677	21,000	33,904	55,950	72,313	109,017	140,860	148,684	182,550	247,612	305,754
North Dakota	8,997	13,075	15,701	24,908	40,446	62,993	71,627	82,585	90,849	92,644	99,852	109,294	117,559
Ohio	63,066	86,054	122,504	181,332	262,431	346,772	412,775	511,031	615,397	720,632	859,504	1,068,700	1,244,000
Oklahoma	6,524	7,934	13,500	25,032	52,718	100,199	121,500	144,500	204,300	221,300	249,659	307,000	374,425
Oregon	10,165	13,957	16,447	23,585	33,917	48,632	63,324	83,332	103,790	118,325	134,299	166,412	192,615
Pennsylvania	59,357	76,178	112,854	160,137	230,578	325,153	394,186	482,117	570,164	689,589	829,737	1,064,624	1,250,198
Rhode Island	8,565	10,294	12,331	16,362	21,406	37,046	36,218	44,833	50,375	54,957	66,466	85,480	95,407
South Carolina	10,000	11,500	14,500	15,000	19,000	38,322	55,492	70,143	92,843	90,546	95,978	128,656	163,382
South Dakota	14,481	14,578	20,929	28,784	44,271	67,158	90,521	104,628	120,395	119,274	125,238	131,720	142,340
Tennessee	12,490	14,860	19,769	22,738	30,000	48,000	63,000	80,422	101,852	117,025	135,716	173,865	203,495
Texas	35,187	54,362	64,732	90,000	1,197,687	213,334	261,118	331,310	427,693	467,616	526,238	688,899	831,712
Utah	2,576	4,021	2,253	9,177	13,507	24,076	32,273	35,236	42,578	47,523	49,156	66,025	79,238
Vermont	4,283	5,918	8,256	11,499	15,671	20,369	22,655	26,807	31,625	36,965	43,881	52,776	61,589
Virginia	5,760	9,022	14,002	21,357	35,426	55,000	72,228	94,120	134,000	141,000	169,000	219,092	260,177
Washington	13,990	24,178	30,253	38,823	60,734	91,337	117,278	148,775	173,920	185,359	220,957	261,224	303,105
West Virginia	5,349	5,088	6,159	13,279	20,571	31,300	38,750	50,203	78,862	93,894	112,763	162,191	190,734
Wisconsin	24,578	34,646	53,161	79,791	115,637	164,531	196,844	236,931	293,298	341,841	388,049	457,271	526,814
Wyoming	1,300	1,584	2,428	3,976	7,125	12,523	16,200	21,371	23,926	26,619	30,637	39,831	43,639
Total	1,010,399	1,248,056	1,768,963	2,494,912	3,584,567	4,970,671	6,105,588	7,596,503	9,206,141	10,505,630	12,299,770	15,222,658	17,731,486

Summary of California Oil Field Operations for Dec. 1924

According to figures collected by the American Petroleum Institute, Pacific Coast office, the total production of crude oil in California for December amounted to 18,795,126 bbls., an average of 606,294 bbls. per day. This is an increase of 14,060 bbls. per day over November production.

Total stocks of crude and all products in Pacific Coast territory increased during the month 1,076,745 bbls. The total stocks at the end of the month were 125,021,964 bbls. The total stock increase for 1924, up to December 31, was 8,294,522 bbls. Comparative figures as of December 31, 1923, November 30, 1924, and December 31, 1924, are shown in detail on the second page of this report.

Seventy-two wells were completed during the month with an initial daily production of 46,800 bbls., compared with 62 wells completed during November with an initial production of 33,130 bbls.

Production

Figures for production and stocks are in barrels of 42 gallons.

District—	Barrels per Month	Daily Average Dec., 1924	Nov., 1924	Dec., 1923
Kern River	553,544	17,856	18,113	15,798
McKittrick	178,008	5,742	5,802	5,776
Midway-Sunset	3,290,980	106,161	109,037	77,346
Elk Hills	1,169,025	37,710	38,417	20,471
Lost Hills-Belridge	152,243	4,911	4,839	2,507
Coalinga	774,803	24,994	24,859	16,840
Wheeler Ridge	27,430	885	850	673
Watsonville	1,758	57	57	57
Santa Maria	231,803	7,478	7,829	7,664
Summerland	4,511	146	146	146
Ventura-Newhall	360,736	11,637	11,266	9,072
Los Angeles-Salt Lake	65,785	2,122	2,240	3,173
Whittier	60,656	1,957	2,113	1,927
Fullerton	356,847	11,511	11,645	11,316
Coyote	629,480	20,306	20,744	2,434
Santa Fe Springs	1,569,870	50,641	53,097	178,504
Montebello	542,037	17,485	16,906	10,573
Richfield	356,881	11,512	11,457	14,332
Huntington Beach	1,300,954	41,966	40,591	6,959
Long Beach	3,893,593	125,600	128,464	227,178
Torrance	1,393,215	44,942	45,586	31,402
Dominguez	1,641,042	52,937	33,767	1,282
Rosecrans	236,785	7,638	4,309	.....
Inglewood	3,140	101	100	.....
Total	18,795,126	606,294	592,234	706,427
November	17,767,034	592,234		
Increase	1,028,092	14,060		

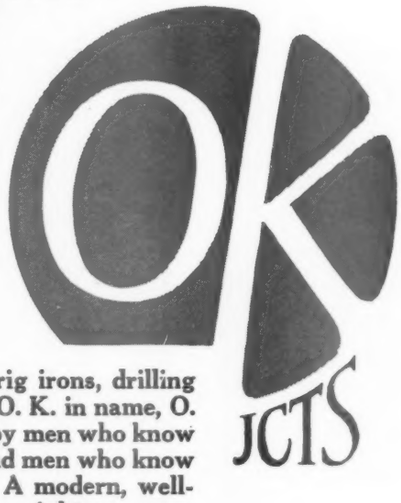
	Stocks Dec. 31 1924	Nov. 30 1924	Dec. Stock Increases	Dec. 31 1923
Heavy crude, heavier than 20 degrees A. P. I., including all grades of fuel	57,254,796	55,828,377	1,426,419	52,393,302
Refinable crude, 20 degrees A.P.I., and lighter	40,574,578	40,946,221	*371,643	36,880,942
Gasoline	10,957,487	10,630,599	326,888	7,696,816
Naphtha distillates	9,396,613	10,458,267	*1,061,654	13,114,490
All other stocks	6,838,490	6,081,755	756,735	6,641,892
Total all stocks	125,021,964	123,945,219	1,076,745	116,727,442

*Decrease.

District—	Development New Rigs Up	Active Drg.	Comp.	Daily Initial Output	Active Prod.	Abd. Drg.	Wells Prod.
Kern River	..	3	..	.....	2,158	..	..
McKittrick	4	10	..	.....	295	..	..
Midway-Sunset	15	67	15	3,596	2,940	2	3
Elk Hills	1	10	7	1,527	261	..	1
Lost Hills-Belridge	..	..	..	.....	316	..	..
Coalinga	1	7	2	112	1,053	..	..
Wheeler Ridge	..	7	..	.....	13	..	..
Watsonville	..	..	..	.....	6	..	..

(Continued on Page 212)

Products that make good



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21,894 Completions, Record of 1924

Initial Production Dropped 47 Per Cent Below That of 1923. Notable New Fields Are Opened and Old Ones Extended

By James McIntyre

Oil operators in the United States completed 21,894 wells in 1924 or 2,544 fewer than in 1923. The combined initial daily production of the oil wells, of which there were 14,771, was 3,255,491 bbls. or 2,759,609 bbls. less than the first-day production of 1923, America's big year in this respect. There were 4,950 dry holes and 2,173 gas wells. The average initial production per well last year was 221 bbls. as against 371 bbls. in 1923, 244 bbls. in 1922 and 200 bbls. in 1921.

The influence of the big fields developed in California and of the Powell Field in Texas was missing in the initial production record of 1924 and no fields were developed last year that made up for the falling off of new production from such fields as Long Beach, Huntington Beach, Santa Fe Springs and Powell.

Richland and Wortham

East Central Texas, in which the Mexia and Powell Fields are located, declined from 1,619,527 bbls. in initial production in 1923 to 275,545 bbls. in 1924. Only 444 wells were completed in that division last year as against 771 wells the year before. The average initial production of the oil wells was 991.5 bbls. in 1924, as against 2,550 bbls. in 1923. Two new pools were opened in this area last year, one at Richland, in March, and the other at Wortham, in November. Richland was on the decline at the close of the year but Wortham had just fairly got started when the year came to an end.

New Fields in California

California completed more wells last year than the year before, but they were much smaller in output, averaging 403 bbls. per well in initial production as against 1,404 bbls. in 1923. A total of 1,238 wells were finished with a total initial production of 508,944 bbls., while in 1923 the record was 980 completions with a total initial production of 1,376,279 bbls. The Dominguez, Wheeler Ridge, Rosecrans, Torrance and Inglewood Fields were developed last year. Inglewood and Rosecrans did not figure at all in 1923 and Dominguez and Wheeler Ridge were opened in that year. Torrance dated back to 1922. None of the new fields assumed anything like the importance of the big fields in 1923.

Oklahoma's Great Record

Oklahoma maintained its record of availability as a storehouse of petroleum and Oklahoma operators kept up their reputation as discoverers of new oil bearing sands. Notable work was done in the State last year, the most sensational being the discovery of Thomas B. Slick of a 4,000-foot sand in the Tonwaka Field which yielded, among many other big wells, the largest initial producer of high grade oil west of the Mississippi if not the entire United States, which was drilled by the Wentz Oil Corp. The deep sand wells in Tonkawa had much to do with the high initial production average reached last year, which had never been equaled in any previous year in the State.

Oklahoma last year showed 4,814 completions, with a total initial production of 1,211,446 bbls. There were 3,038 oil wells completed and they averaged 398.9 bbls. per well in first day output. In 1923 5,833 wells were finished, with a total initial production of 1,277,936 bbls. The 3,515 oil wells made an average of 263 bbls. per well the first 24 hours. In addition to the development of the deep sand in the Tonkawa Field, the Burbank Field showed a flash of new form when operators early in the year, after a long shut down, resumed the development of their leases, and the territory in Seminole, South Okfuskee and Hughes Counties was given a thorough test, resulting in the opening of Cromwell and the expansion of the Gilcrease-Papoose, Wewoka, Okemah and other pools in that part of the State. This district was very active all year, in fact, it was the busiest part of the Oklahoma oil regions. Cromwell was brought to its peak and it was sliding slowly downward in the last half of the year but the Papoose area had not reached its zenith. In Carter County, wildcatters found extensions and new pools of small area and a small pool was opened in Township 6s-5w, in Jefferson County. Near the city of Tulsa, Wilcox sand discoveries were followed by town lot operations in the villages of Vern and Bruner, while a Wilcox sand campaign in the Hominy and Pawhuska districts in Osage County opened up wells of high initial production. The Stroud Pool, in Lincoln County, was developed and was on the decline at the close of the year. The Otoe or Watchorn Pool and the Donahoe Pool in Pawnee County were important discoveries of Wilcox sand production which will come in for development this year. In Kay County the Braman and Thomas Pools were opened.

New Pools in Kansas

Kansas' bid for fame in 1924 lies in the opening of pools in Cowley County, particularly the Rainbow Bend area, which, at the close of the year, was yet undefined. The greatest activity, however, was in Greenwood County. The wildcat campaign in the western part of the State was fruitless for the most part, only Russell and Rice Counties showing any production in commercial quantities. Many dry holes were drilled in scattered parts of Western Kansas last year. Montgomery County flashed into prominence for a short time when Wilcox sand pools were opened by Homer Lamb and others. These were small in area and flashy in productiveness, however, and the dry hole record in the county demonstrated that the Wilcox sand was, in that county, possessed of all the treacherousness for which it is noted. The completions in 1924 numbered 1,125 and the initial production 92,268 bbls.

North-Central Texas

New pools of considerable importance were opened last year in Archer and Wilbarger Counties in North Texas resulting in many drilling operations. A deeper sand with wells of 700 and 800 bbls. initial production was opened in the South Vernon district in Wilbarger County. It is a streaky formation where every test was a gamble, but it produced a lot of oil for those fortunate enough to get pay. The opening of a pool in Reagan County, on lands owned by the Texas State University was one of the most important events of the year in the Central Texas territory. This development which is in the hands of two companies, the Texon Oil & Land Co. and the Big Lake Oil Co., has been developed slowly because of a lack of marketing facilities, but it is expected to make one of the most important pools in that division this year. It is in the 1,000-bbl. class in initial production of its wells. The Texas panhandle, where at the beginning of each year big developments are expected, passed another 12 months without sensational incident. There were 2,814 completions in the entire North Central Texas area, 148 more than in 1923. The initial production was 227,209 bbls., or 41,385 bbls. in excess of that of 1923. The dry holes numbered 1,047 as against 861 in 1923 indicating the strenuosity of the wildcatters. Seventy-five gas wells were completed, 6 more than in the year previous.

Louisiana-Arkansas

In Louisiana the discovery of an oil pool in Webster Parish which almost rose to major proportions was the most important event of the year. This was named the Cotton Valley Pool. It was opened in May with an 11,000-bbl. initial producer which soon after dropped to 750 bbls. of oil a day. The field reached its peak late in the year. The oil in most cases is badly emulsified or mixed with salt water. Important gas districts were developed in the same parish last year, also in Bossier Parish. There were 423 completions in Louisiana in 1924 or 58 fewer than in 1923. The initial production was 66,917 bbls. as against 18,610 bbls. the previous year, showing the influence of Cotton Valley.

Important extensions to fields in Arkansas marked the year's development in that State. No new fields were opened. An extension, 3 miles west of Norphlet in Union County was followed by a campaign in drilling between Norphlet and Louann. The latter field was also extended in the course of the year. A total of 1,385 wells were completed in Arkansas in 1924 with initial production of 206,445 bbls. In 1923 the record was 1,669 completions and 826,710 bbls. production. The average initial production of oil wells yast year was 179.1 bbls. as against 611 bbls. in the heyday of Smackover, the previous year.

In the Gulf Coast region last year 962 wells were completed with initial production of 238,150 bbls. In the

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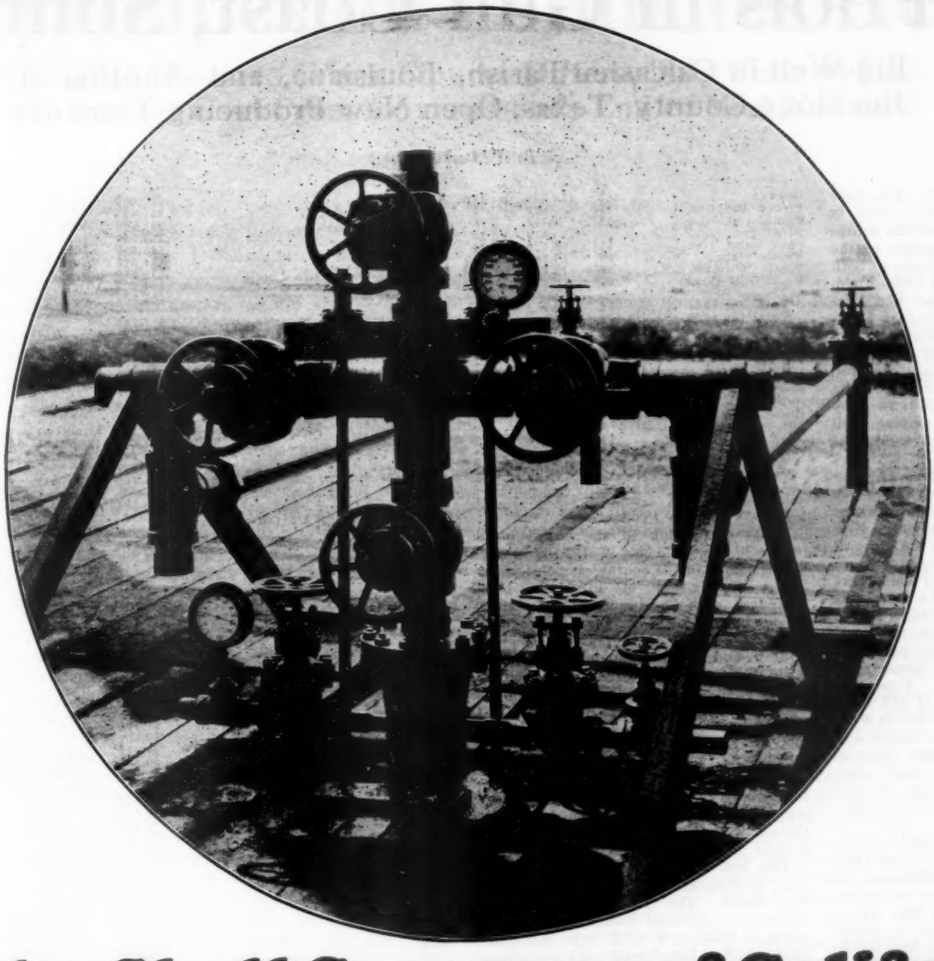
SUMMARY OF COMPLETED WORK IN ALL THE FIELDS IN THE UNITED STATES IN 1924 AND 1923

		Comp.	Prodn.	Dry	Gas	Oil Wells	Av. In. Prodn.
Eastern	1924	4,212	15,971	616	833	2,763	5.8
	1923	4,528	18,060	711	850	2,967	6.0
Central Ohio	1924	605	1,993	147	285	173	11.5
	1923	642	1,657	193	365	84	19.7
Lima	1924	592	9,745	63	42	487	20.0
	1923	697	13,151	75	17	605	21.7
Indiana	1924	150	3,445	46	11	93	37.0
	1923	175	4,411	49	4	122	36.2
Kentucky	1924	1,605	25,599	368	61	1,176	21.8
	1923	1,943	33,692	471	80	1,392	24.2
Tennessee	1924	28	1,199	19	6	3	400
	1923	54	1,684	41	1	12	140
Michigan	1924	....	.....	...	...	....	...
	1923	1	0	1	0	....	...
Mississippi	1924	7	0	6	1	....	...
	1923	13	0	12	1	....	...
Alabama	1924	1	...	1	...	...	...
	1923	...	...	...	...	...	...
Georgia	1924	....	.....	...	...	....	...
	1923	2	0	2	0	....	...
Illinois	1924	179	5,079	55	2	122	41.6
	1923	260	5,014	94	18	148	33.9
Kansas	1924	1,125	92,268	398	79	650	141.9
	1923	1,405	61,372	535	63	807	76.1
Oklahoma	1924	4,814	1,211,446	1,308	468	3,038	398.7
	1923	5,833	1,277,936	1,731	587	3,515	263.0
North Central Texas	1924	2,814	227,209	1,047	75	1,692	134.3
	1923	2,666	185,826	861	81	1,724	108.0
East Central Texas	1924	444	275,545	149	6	289	953.1
	1923	771	1,619,527	133	3	635	2,550.0
Gulf Coast	1924	962	238,150	340	10	612	367.7
	*1923	1,669	428,945	492	..	1,117	384.0
Southwest Texas	1924	446	213,460	71	47	286	746.2
	1923—Included in Gulf Coast						
North Louisiana	1924	423	66,917	113	164	146	458.3
	1923	481	18,610	137	143	201	92.0
Arkansas	1924	1,385	206,445	184	49	1,152	179.1
	1923	1,669	826,701	230	85	1,354	611.0
Montana	1924	170	27,744	58	8	104	266.7
	1923	248	14,688	75	11	162	91.0
Wyoming	1924	664	112,695	43	22	590	188.1
	1923	451	126,545	40	37	374	338.0
Colorado	1924	11	9,330	5	2	4	2,332.5
	1923	2	500	0	1	1	500.0
New Mexico	1924	13	2,307	2	0	11	209.7
	1923	7	500	0	1	6	83.0
Utah	1924	6	0	4	2	....	...
	1923	1	0	0	1	....	...
California	1924	1,238	508,944	....	....	1,238	411
	1923	980	1,376,279	....	....	980	1,404
Total	1924	21,894	3,255,491	4,950	2,173	14,771	221
Total	1923	24,438	6,105,100	5,883	2,349	16,206	371
Difference	....	2,544	2,759,609	924	193	1,435	150
Total	1922	24,658	4,226,119	5,329	2,011	17,288	244
Total	1921	21,775	2,827,809	5,013	2,135	14,027	200

*Included Southwest Texas.



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New Pools in Gulf Coast, Southwest

Big Well in Calcasieu Parish, Louisiana, and Another in Jim Hogg County, Texas, Open New Producing Territory

By P. L. McGreal

HOUSTON, Tex., Jan. 26.—The year 1924 presents many contradictions in both the Gulf Coast pools and the southwest fields. The last six months of the year shows a slump in operations in both divisions, especially in the Luling Field. Two new pools were opened. The Vacuum Oil Co. brought in a well near Lockport, Calsasieu Parish, Louisiana, in September. It started flowing 3,000 bbls. and is still averaging better than 750 bbls. per day. No new wells have been developed there yet although two deep holes to the north of the flowing well have been abandoned. The sand was found around 2,900 feet.

The other field is located near Hebronville, in Jim Hogg County, and was opened in October, with a well making 750 bbls. initial from 1,900 feet. Five wells have been completed at the close of the year with 5,100 bbls. initial output.

In the Gulf Coast pools 964 wells were completed during 1924. The new production aggregates 440,160 bbls. with 348 dry holes and salt water wells. Some of the latter eventually became producers either by drilling through to deeper sand or packing off the water. Compared with 1923 this is a decrease of 215 wells completed and an increase of 85,773 bbls. new production. The dry holes and water wells number 113 less than in 1923. It will thus be seen that while the completions are less than in the previous year there is a gain in new production.

The increase in initial output is due to big wells on the east side of the Hull Dome and a northwestern extension in the same pool by the Humble Oil & Refining Co. A joint well by The Texas Co. and the Vacuum Oil Co. extended the producing area there to the southwest.

The Orange Pool contributed to the increase in new production with wells to the southeast and on Cow Bayou, but they did not hold up.

The Gulf Production Co. drilled a test in the Orange Pool to below 5,300 feet and a dozen holes went as deep as 5,000 feet.

In the Southwest Texas field wells completed number 446 an increase of 16 over 1923. The new production totals 214,205 bbls., an increase of 139,647 bbls. The dry holes aggregated 65 against 31 last year.

In the Luling Field the completions total 156 with 187,815 bbls. new output. The dry holes listed 12. In the Laredo districts 134 wells were completed with 16,220 bbls. new output and 14 failures. Wildcatters drilled 27 holes in the southwest counties, 19 of these being failures. A few light wells at a shallow depth were developed by the Ina Oil Co. in Medina County and gas wells in Live Oak, Kleberg, San Patricio and the northwestern part of Webb County, near the Duval County line. A gas well near Bruni, Webb County, ignited and burned for 10 days before it was finally gotten under control and the flames smothered.

A new deep sand was developed in the Vinton Pool on the southeast side by the Vinton Petroleum Co.

The following table shows the completions, new production and failures in the costal region and the southwest fields during 1924:

Summary of Operations Gulf Coast and Southwest Fields for Year 1924

Districts	Comp.	Prod.	Dry or Sw.
Batson	80	5,804	17
Blue Ridge	11	4,765	4
Barber Hill	3	1,000	2
Big Creek	17	5,120	7
Damon Mound	16	170	10
Edgerly (La.)	17	1,155	3
Goose Creek	119	16,865	25
Humble	37	18,350	11
Hull	161	178,455	45
Jennings (La.)	27	2,150	16
Markham	7	2,110	4
Orange	152	174,990	47
Pierce Junction	11	625	8
Spindletop	36	1,498	9
Saratoga	36	419	15
Sour Lake	52	2,620	24
Vinton (La.)	69	7,705	18
West Columbia	28	11,045	7
Misc. Gulf Coast	85	5,314	66
Total for 1924	964	440,160	348
Total for 1923	1,179	354,387	461
Difference	215	85,773	113
Southwestern Fields			
Luling	156	187,815	12
Laredo	134	16,220	14
Somerset	16	214	2
Callihan	66	3,105	14
Rockdale-Minerva	41	741	4
Jim Hogg County	6	6,100	0
Misc. Sw. Counties	27	10	19
Total for 1924	446	214,205	65
Total for 1923	430	74,558	31
Difference	16	139,647	34

Gross Production

Gross production in the costal pools totals 30,148,019 bbls. in 1924 and 13,653,414 bbls. in the southwest fields, making a grand total of 43,801,433 bbls. compared with 28,516,691 bbls. in 1923.

The largest pools in the gulf country are Goose Creek, Hull, Humble, Orange, Vinton and West Columbia. Compared with 1923, the Goose Creek Pool declined 2,026,692 bbls. Hull fell off 355,754 bbls. and Humble is slightly less than last year. The Orange Pool declined 1,062,898 bbls. and West Columbia, 1,776,446 bbls.

In the old pools, such as Batson, Saratoga, Sour Lake and Spindletop, the average was maintained by working over the old wells, supplemented by new wells located between old producers.

The last six months witnessed a decline in drilling operations in the southwest fields. The Somerset district, for illustration, declined from 1,253,217 bbls. gross in 1923 to 910,765 bbls. last year. Bad weather interferred with operations in the Laredo districts during the last three months and in addition many rigs were transferred to the new pool in Jim Hogg County.

The following table gives the gross production in each district by months and summarized. The gross for the Luling Field during 1923 was placed at 1,000,000 bbls. and included but a part of the year:

Gross Production Gulf Coast Pools and Southwest Fields by Districts and Months for 1924

Batson

	Monthly Prod. Bbls.
January	34,472
February	31,640
March	37,231
April	38,850
May	48,298
June	45,450
July	48,980
August	52,235
September	50,250
October	50,685
November	49,680
December	48,540
Total	536,311

Blue Ridge

January	20,937
February	14,900
March	20,213
April	22,800
May	40,703
June	39,030
July	26,629
August	20,739
September	27,438
October	25,389
November	25,170
December	22,321
Total	306,318

Edgerly

January	10,913
February	11,900
March	15,717
April	11,580
May	14,043
June	16,920
July	17,608
August	16,864
September	14,040
October	15,321
November	15,060
December	16,300
Total	176,165

Goose Creek

January	409,913
February	384,325
March	416,392
April	337,660
May	385,454
June	331,500
July	358,949
August	346,890
September	314,010
October	373,643
November	334,500
December	303,304
Total	4,296,540

Barber Hill

January	7,192
February	7,728
March	15,593
April	7,050
May	5,207
June	4,860
July	5,487
August	5,456
September	4,604
October	4,247
November	4,350
December	4,340
Total	76,114

Dayton

January	2,759
February	2,670
March	2,914
April	2,730
May	2,666
June	2,580
July	2,945
August	3,379
September	2,710
October	2,945
November	2,760
December	2,480
Total	33,538

Damon Mound

January	54,436
February	35,728
March	50,809
April	38,010
May	50,064
June	45,540
July	46,159
August	45,539
September	40,260
October	40,455
November	37,770
December	40,331
Total	525,101

Humble

January	170,066
February	154,715
March	156,705
April	145,350
May	160,952
June	219,750
July	225,463
August	233,089
September	208,380
October	189,565
November	158,010
December	165,571
Total	2,187,616

Hull

January	576,631
February	898,336
March	775,504
April	662,520
May	569,935
June	634,260
July	652,240
August	670,871
September	563,070
October	410,420
November	537,540
December	480,314
Total	7,431,641

Jennings

January	20,646
February	16,156
March	16,461
April	15,330
May	16,740
June	16,410
July	17,329
August	19,034
September	21,020
October	24,025
November	29,010
December	28,334
Total	240,495

Markham

January	3,069
February	2,800
March	3,131
April	2,830
May	21,824
June	13,080
July	10,602
August	5,487
September	3,570
October	4,340
November	5,700
December	5,604
Total	82,037

Orange

January	366,513
February	303,300
March	406,797
April	389,020
May	361,181
June	304,320
July	314,867
August	376,247
September	351,060
October	335,730
November	409,650
December	332,072
Total	4,250,757

Pierce Junction

January	21,700
February	17,096
March	18,642
April	17,810
May	17,336
June	13,661
July	11,470
August	8,310
September	7,500
October	5,114
November	13,520
December	18,317
Total	173,500

Big Creek

*October	2,500
November	147,700
December	35,950
Total	186,100

*Pipe line opened to pool from Blue Ridge and wells opened and storage taken out. Carried as miscellaneous during previous months.

Spindletop

January	30,184
February	33,194
March	27,602
April	26,520
May	29,364
June	27,900
July	30,620
August	29,195
September	33,300
October	33,135
November	33,640
December	37,665
Total	361,305

Saratoga

January	51,907
February	51,304
March	46,810
April	50,170
May	46,305
June	44,310
July	49,961
August	46,420
September	49,875
October	44,830
November	45,530
December	46,276
Total	559,691

Sour Lake

January	140,335
February	134,630
March	140,916
April	139,040
May	142,383
June	134,856
July	138,190
August	138,911
September	134,720
October	137,826
November	117,630
December	113,660
Total	1,632,248

Vinton

January	169,165
February	163,622
March	166,861
April	164,300
May	161,440
June	159,130
July	176,700
August	174,964
September	134,670
October	189,960
November	179,120
December	184,660
Total	2,004,303

Welch-Anse La Bute

January	3,941
February	3,530
March	3,700
April	3,650
May	3,650
June	3,600
July	3,700
August	3,670
September	3,670
October	3,700
November	3,700
December	3,700
Total	31,811

West Columbia

January	495,532
February	394,046
March	415,139
April	393,700
May	364,994
June	335,070
July	359,817
August	385,900
September	447,530
October	508,090
November	393,750
December	393,670
Total	4,773,235

Lockport (La.)

October	53,500
November	26,500
December	37,137
Total	**117,726

**Field opened September 8, 1924. One well there.

Miscellaneous

January	13,300
February	8,100
March	10,300
April	13,200
May	17,400
June	23,342
July	20,675
August	17,200
September	6,500
October	

(Continued on Page 194)

Crude Production Estimates Accurate

Total of Week to Week Figures Differs Only Four-Tenths of One Per Cent From Government's End of Year Estimate

By Andrew M. Rowley

The weekly estimate of the production of crude petroleum in all oil fields of the United States has become of such vital importance to oil men everywhere, it is about the first thing they look for each week in checking up developments and conditions in the petroleum industry. Prices of refined oil products depend upon the cost to the refiner of his crude oil. And prices of crude fluctuate with the supply and demand, the supply being the amount of oil being produced and ready for the market. Hence, it is almost necessary that everyone connected with the oil business, whether he be a producer, refiner or marketer, knows each week the status of crude oil production and whether the trend of production is upward or downward.

During the past year, the necessity of keeping in close touch with crude production figures has so impressed itself upon oil men, the weekly estimate on production has become a most important news feature and one greatly sought. The leading news services, such as the Associated Press, carry briefly the weekly estimates on their leased wires and these estimates are given a prominent position in the daily newspapers of the country. Stock exchange brokerage houses place the figures on their private wires and send them to their various offces for the benefit and guidance of their customers. A number of the larger oil companies have the figures telegraphed to their offices that their officials may know at the earliest possible moment what the estimates show. Oil men in various cities use the long distance telephone to obtain the figures as soon as possible. All of which shows how important this weekly estimate has become to oil men and the petroleum industry in general.

The Government's Figures

Questions have arisen at times in the minds of some oil men and others not directly connected with the oil business as to the accuracy of the weekly estimate on crude oil production. Various newspapers have commented from time to time upon differences in estimates prepared by different organizations. One newspaper recently, in comparing the weekly estimates with figures issued by the United States Geological Survey, indicated quite plainly it did not realize that the Government figures did not represent total production of crude as did the weekly estimate but showed only the quantity of oil removed from leases.

This fact is stated plainly by the Government in each of its monthly reports, the latest report issued, that for November, 1924, containing the following statement, which is quoted verbatim: "The figures given below for 1924 for the States east of California, compiled from reports made to the Geological Survey by companies that opereate gathering lines, are preliminary and show the quantity of petroleum transported from producing properties. Petroleum consumed on leases and produced but not transported from the producing properties, ranging for the past few years between 4,000,000 and 9,000,000 bbls. annually, is not included in the preliminary figures. These items are given in the final statistics which show all the oil brought to the surface."

Estimates Are Timely

Heretofore the final report on crude oil production has not been issued by the Geological Survey usually until in August of the year following the year covered by the report. The report for 1923 was issued in August of 1924. It is probable the final report for 1924 will be issued during August of this year. In its report for November, the Geological Survey stated it is indicated production of crude petroleum for 1924 will total 717,000,000 barrels this being 710,000,000 barrels of crude transported from producing properties and 7,000,000 barrels in addition for fuel consumed and changes in producers' stocks.

The weekly estimate on crude oil production compiled by The Oil and Gas Journal is publised four days after the close of the period covered by the estimate. The final figures of the Government are published about eight months after the close of the year covered. When it is remembered the monthly reports of the Government include only oil removed from leases and that final figures on total production figures are not published until the annual report of the Government is issued in August of the year following, the Government figures on crude oil production for January of any year are not available for 19 months after the close of that month; for February, not for 18 months later, etc.

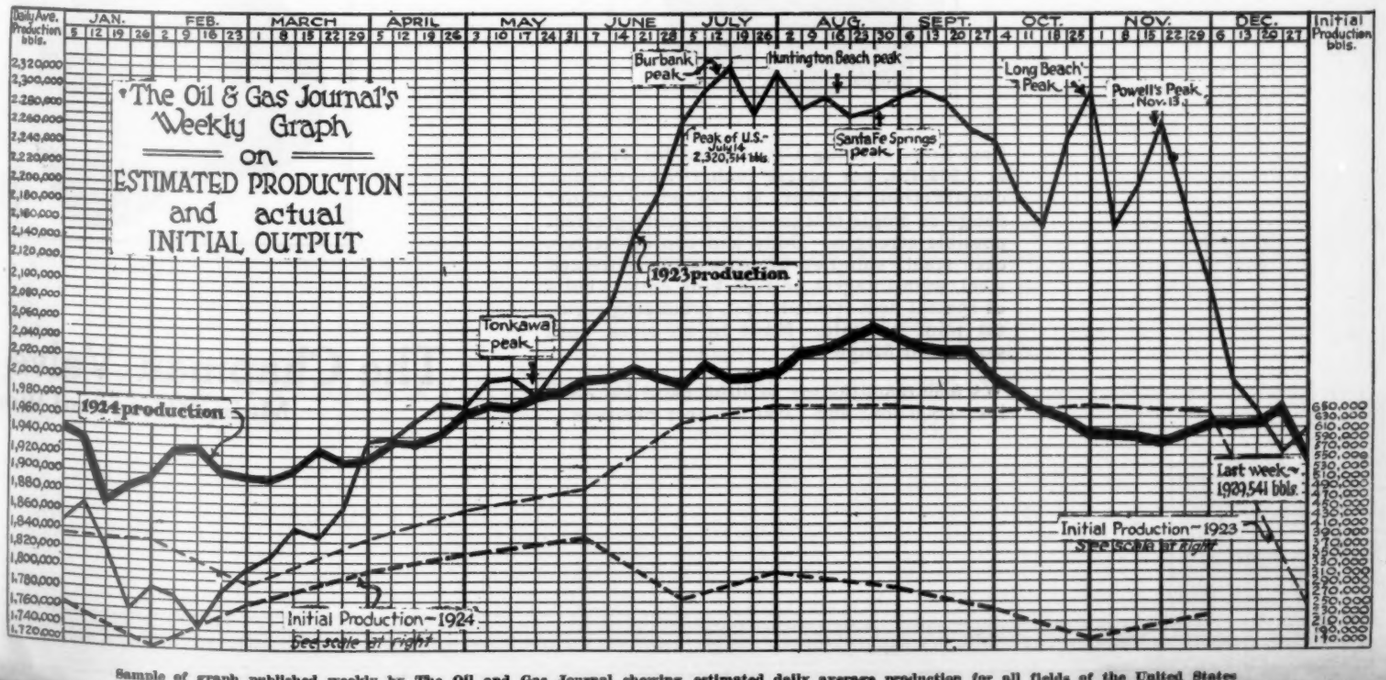
Differ Only Four-Tenths Per Cent

Consequently, the weekly estimate on crude oil production is the only true gauge the oil man has of this vital feature of his business. That this estimate would be worse than valueless if not accurate, goes without saying. Its value lies in its accuracy. Were the estimate not an accurate statement of conditions, it would do incalculable harm as many oil companies and individuals plan future operations on the trend of production as shown by the estimates.

Because of the vital importance of the weekly estimate and the intense interest displayed by oil men everywhere in these estimates, The Oil and Gas Journal takes this occasion to compare its figures, as published weekly during 1924, with the preliminary estimate for the United States Geological Survey. The Government estimate for total production of crude in 1924, as stated above, is 717,000,000 barrels. The total production as given by The Oil and Gas Journal in its weekly estimates was 719,965,597 barrels. In other words, the total of the weekly estimates of The Oil and Gas Journal for the year 1924 differed only four-tenth of 1 per cent from the preliminary total as announced by the Government.

It is not hard to visualize how small a difference of less than one-half of 1 per cent is in an estimate. For example, suppose a well actually gauged 100 barrels a day. If an estimate of 100.4 barrels per day was made on the production of that well, anyone would admit that was mighty close figuring. The four-tenths of 1 per cent difference between the weekly estimates of The Oil and Gas Journal and the preliminary total as announced by the Gov-

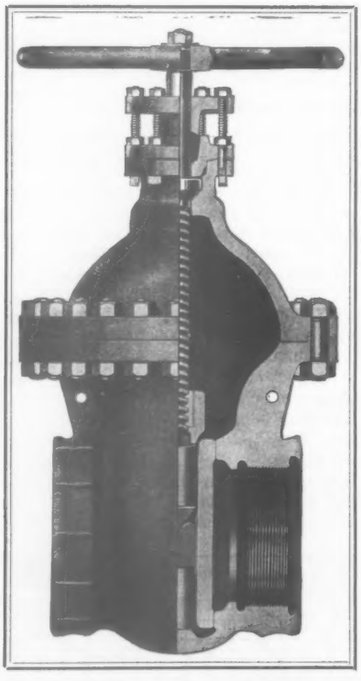
(Continued on Page 194)



Sample of graph published weekly by The Oil and Gas Journal showing estimated daily average production for all fields of the United States

CHAPMAN

For All Phases o



Cast Steel Drilling Gate, tested for 24 hours at 2,500 lbs. per square inch. Note circular construction, a spherical cap with circular flange of ample thickness to provide greatest possible strength. Body and cap of electric cast steel, spindles of special heat-treated steel, with integral, self-packing collar; bolts of special heat treated steel, producing tightest joint possible. Made in all sizes, both screw and flange end.

We also manufacture drilling gates for 2,000 lbs., 1,500 lbs., and 1,000 lbs. test pressure.

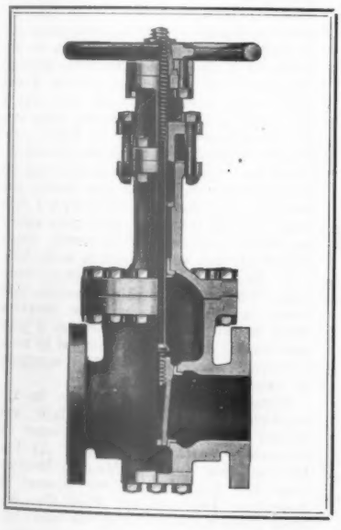
Semi-steel gate valve for pipe line service suitable for working pressures up to 750 lbs. per square inch. Designed especially for extreme working pressures, and made exceptionally heavy throughout.

The Chapman Valve
Main Office and Wor

VALVES

the Oil Industry

Cast steel gate valve for Tar Line service. *Note cleanout on bottom, which permits cleaning of the valve without removal from the line.* Simply remove the bottom plate, and replace after cleaning.



Chapman Chrome Nickel Steel Gate Valve for Refinery Service. Suitable for working pressures up to 400 lbs. Note the physical properties of this steel under 1000 degrees Fahr. Elastic Limit.....51,000 lbs. per sq. in.
Tensile strength.....66,000 lbs. per sq. in.
Elongation in 2".....27%
Reduction Area 55%

nufacturing Company
Indian Orchard, Mass.

Mexico's Record of Wells Completed

Greatly Increased Field Work Failed to Maintain Production Which Fell Off Twelve Million Barrels From Record of 1923

By George Blardone

TAMPICO, Mexico, Jan. 24.—Preliminary review of the production of petroleum in Mexico during 1924 places the figure at 139,069,446 bbls. This means a decrease of 12,000,000 bbls. from the production of 1923. The subjoined table gives this production by months, both light and heavy oils being set forth. These figures, and all other figures used herein, are subject to correction in the final revision for the year now underway, but it is submitted that they are substantially correct, that such approximations as were made are conservative; and, that such errors as the final reports may indicate will be so small that they will be merely of academic value.

In the subjoined table it will be noticed that the apex of production in the heavy oil districts was arrived at during the month of March. This was when the Cacalilao sector of the northern fields reached its peak, as this prolific sector was and is, in large measure, the predominant factor in actual heavy oil production. Ebano came rapidly to the front as the year drew to a close, its completed wells of worth considered, but it is in reserve yet, comparatively speaking, not figuring largely in actual production and movement. The light oils produced are possibly 70 per cent Mexican Petroleum production as this company was the only real production factor in the south fields throughout the year under review.

Vessel Movements

The vessel movements of petroleum during 1924 from Mexican ports of primary clearance (i.e. Tampico, Port Lobos and Tuxpam), will total 132,800,000 bbls., a decrease from the same movement in 1923 of 8,000,000 bbls. Most of the movement, as usual, was export, a very small percentage going coastwise for domestic consumption. Of the volume exported the United States received approximately 89,000,000 bbls. The difference between the volume exported and the volume produced belongs to domestic consumption. At the end of the year just passed there was no surplus to carry over into the present year, the production of 1924 considered. If anything stocks at the present time are less than were stocks held in storage January 1, 1924, when total storage, all grades and classes, aggregated 22,404,439 bbls. Indeed, more than 1,000,000 bbls. of crude were imported from the United States by one company owing to its individual loss in production.

Wells Completed

There were more wells drilled to completion in Mexico last year than in any previous year in its petrolific history. The total for 1924 was 728 wells. In 1923, a high record was made with the completion of 471 wells, which indicates 257 more completions in 1924 than in the previous record year. The percentage of wells finishing in the pay, however, comparatively speaking, was much higher in 1923 when 217 wells finished as producers, as against only 257 so finishing in the year under discussion. The greatest activity was, of course, in the northern fields (with special reference to Cacalilao), some 638 wells being drilled to completion there with 214 finishing in the pay. The south fields finished 90 wells with 43 of them finishing in the pay. Few of these completions in 1924 belonged to the wildcat division, most of them being in proven, or at best, near-proven territory.

Northern Operations

Interest centered throughout the year in the northern fields and in large measure in the Cacalilao sector. While the most prolific lots, Nos. 3, 4 and 5, were in the hands of four large companies, the extensive eastern lot 1, a lot of very large acreage was one in which nearly everybody had a finger in the pie and apart from some of the larger companies a flood of smaller operators secured small leases or at least drilling locations. The result was an avalanche of wells, most of which were completed failures, and unfortunately the majority of them drilled into the pay in this lot did not last long, going to water quickly. Even in the prolific lots 3, 4 and 5 the water invasion commenced to shew itself more markedly as the year advanced; and the net result is that despite a fair average of completions by the four major companies noted of good wells the production curve continued and still continues on the downward swing, Cacalilao considered as a whole. Just north of Cacalilao, in an extensive acreage known as Paciencia, several good wells were brought in as the year closed, being drilled by Transcontinental Petroleum Co., for account Penn-Mex Fuel Co., the latter company owning this entire sector.

Ebano, lying fairly dormant for a long while, increased its drilling operations during the year, spreading them out over this big property, all of which is owned by Mexican Petroleum Co., to the end that it has shot its production up to more than 60,000 bbls. the day, but is running less than this at the present time. It constitutes a vital reserve for Mexican petroleum; and the late months of the year saw Ebano crude for the first time in the history of this the discovery field in Mexico, figuring in the export movement.

The old Panuco sectors saw some little drilling here and there and a few small wells resulted. It continued a stripping proposition, to speak broadly, throughout the year. The Topila sector was of small moment insofar as production was concerned and of little interest in its wells completed. The El Barco sector, just east of Cacalilao, saw some small wells finished that were put in production. This sector is divided between Mexican Gulf Oil Co. and Kern Mex Oil Fields, Ltd.

Actual Daily Production

In sum, actual production for the last month of the year in the northern fields found Panuco-Cacalilao-Paciencia and El Barco and Topila doing 215,000 bbls. the day, a slight increase, thanks to some late November-December completions in Cacalilao-Paciencia. This increase, however, went to two companies; and some of the late completed wells were not yet in exploitation as the year endd. Ebano is running practically 40,000 bbls. the day with some pay completions in reserve not yet exploited.

The South Field was doing say 120,000 bbls. the day as the year ended, most of which was Huasteca Petroleum Co. (Mexican Petroleum) production, and it too, has some wells in reserve not figured in these actual production figures.

To revert for a moment to the figures of wells completed during the past year, no new production figures were given for new pay completions. Such figures would simply mean nothing now as so many of the wells failed shortly after being brought in. And apart from Ebano, it required steady drilling to maintain production on a fairly even keel in the latter months of the year. In the south fields the only wells of more than stripper size to be completed were Huasteca Petroleum property and it succeeded in building its available production back up with its operations in Tierra Blanca and Cerro Azul.

The Wildcatters

Considering first the northern fields, when Cacalilao commenced to confound the smaller operator with salt water invasions in much drilled lot 1 last summer, a sector known as Tortuga, just north of Chila station on the San Luis division of the National Lines attracted the attention of some of the independents and they commenced there. The first well down drilled into salt water, and thus far no other of the some half score tests started there have been finished although one looks interesting and is manfully struggling to drill in at this time. On the whole this little piece of territory was not called a New Year's gift. Just northwest from here was a fine looking sector, Corcovado, lying east of the easternmost part of Ebano's extensive holdings. It was fairly well divided up between big companies and independents; and when the latter, pay hungry, went for their slices with a rush some of the big companies came slowly in behind not content to merely watch and wait, but commenced to make hole, too. Result to date, 11 failures, no showings. The one great thing, however, that keeps hope eternal in these northern fields is the fact that sometimes a good producer is drilled in surrounded by rank failures; wherefore the drill continues to descend in Corcovado.

North of the Tamesi River, in Tamaulipas State, another failure was drilled in Manual hacienda some 70 kilometers north of Tampico. As Los Esteros, just south of Manuel, Mexican Gulf Oil Co., drilling for account of American International Fuel Co., finished three failures during the year; but has some showings at a reasonable depth in a drilling test not yet completed. To go well north of the entire district, i.e. near Linare Station, State of Nuevo Leon, on the Monterrey Líne, at a place called Popote, Agwi Cos. (Atlantic Gulf Oil Corp.) drilled to 3,000 feet in a test that was perfectly dry. Other major companies in Tampico were interested with the Agwi in this operation as many of them had blocked out acreage on well defined structure; but if structure was there apparently oil wasn't. To close the record for Tamaulipas, Mexican Petroleum Co. has yet standing a deep test, No. 1 Tancasneque, which is north of the Tamesi River from Ebano, and west of Los Esteros. This is interesting looking country. The No. 1 may be sent deeper for geologic reasons. It had the Tamasopa lime at around 2,000 feet; and shut down at 3,203 feet, in the same formation, with some salt water stand-

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THREE-CENT TAX ON GASOLINE SALES BEFORE LEGISLATURE OF WYOMING

By F. B. Taylor

CASPER, Wyo., Jan. 24.—The recent meeting of the Wyoming Petroleum Club discussed the additional 2-cent gasoline tax now before the Legislature, making a total of 3 cents tax, there being already a tax of 1 cent on gasoline sales in the State.

Like most other taxpayers, the oil men object to additional taxation, and with good reason. The oil business, through Government and State royalties and taxes paid, during 1924, 52.9 per cent of all State expenditures in Wyoming.

The Wyoming Petroleum Club invited State Highway Engineer C. H. Bowman to give the Highway Department's position and Vice President R. S. Ellison of the Midwest Refining Co., the views of the oil men.

Mr. Bartram argued that the use of the road is perhaps better metered by the amount of gas consumed than in any other way. "A heavy truck tears up the road more than a light one and uses more gasoline. Therefore, if the service the road gives is metered by the gas consumed, the large truck and the light truck will pay their fair proportion to the maintenance cost and in proportion to the service the road gives. The user should at least pay for the upkeep in some way. The State Highway Commission has suggested a 3-cent gasoline tax. This appeared to be the best way to get the user to pay for the service the road gives him. Until the latter part of the nineteenth century most highways and trunk lines were largely privately constructed and operated and were financed by tolls levied on the use of the road. Unsatisfactory service and exorbitant charges by the operating companies brought about the abolition of the toll system, the roads being taken over by the State or its subdivisions. The rapid increase of motor vehicles has brought about a partial return of the toll system in the shape of the motor vehicle license tax and in the last few years, the gasoline tax. In other words, the tendency is to let those who use the public highways pay for the upkeep according to service rendered. If the roads are to be maintained the expense of this work has to be paid."

Suggests Toll Tax

Mr. Ellison said he understood Highway Department officials were spreading propaganda leading the public to believe the new tax was to be borne by the petroleum industry rather than the public. In reality the tax will come out of the pockets of those who buy petroleum products.

At present, every business man is trying to economize and to add to the burden with this tax, would be harmful in the extreme. The oil industry is being held up as a great and rich field by those spreading this propaganda for this tax. It is further stated that if such tax were placed on gasoline, the oil companies would be afraid to raise the price to any high level. Mr. Ellison stated that, in his opinion, most of the oil companies operating in Wyoming would have to have higher prices for their crude shortly or they would have to cease operations and a rise in crude meant a corresponing rise in the cost of gasoline.

In the discussion that followed Mr. Ellison's talk, the matter of the oil companies accepting the heavy royalty terms in this region was brought out and Mr. Ellison cleared up the matter of the 65 per cent royalty on Section 36-40-79 in Salt Creek.

This famous section was leased to the Wyoming Associated and the Midwest oil companies, and long before the expiration of this lease in 1924, others in 1923, from another region, attempted to gain control of the area. This, Mr. Ellison said, would have meant a heavy loss eventually to the State, for had their plans succeeded, the Midwest and other companies would have been compelled to start an intensive line

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New Production Record for Oklahoma

Output in 1924 Was 176,206,397 Bbls. an Average of 481,438 Bbls. Per Day. Burbank Field Led All

By James McIntyre

Breaking its past production records is an old story with Oklahoma. In 1924 it surpassed all its past performances with a total crude output of 176,206,397 bbls. In 1924 the State produced 165,012,685 bbls. Its record for the past five years has been as follows: In 1920, 107,849,857 bbls.; 1921, 115,679,576 bbls.; 1922, 148,746,845 bbls.; 1923, 165,012,685 bbls.; 1924, 176,206,397 bbls. Its increase in production last year over that of 1923 was 11,193,712 bbls.; and over that of 1922, 27,459,452 bbls. Its production last year was equal to that from 1891 to 1909, inclusive, and a part of 1910, and was equal to the production for the remainder of 1910, all of 1911, 1912 and a part of 1913. It exceeded the combined production of the years 1918 and 1919 by several million barrels.

He would be a daring prophet who would venture to say that the production of 1924 would be Oklahoma's peak, because there is a vast area of territory in the State yet unexplored which may be hiding more Tonkawas, Burbanks and Cromwells in addition to many little pools that may lie between the pools now being developed. On either side of a line drawn in a southwesterly direction from the Rainbow Bend Pool in Cowley County, Kansas, taking in parts of Kay, Noble, Garfield, Logan, Kingfisher, Canadian and Oklahoma Counties, is an area of exploration that may be the scene of big operations in the months or years to come, and Seminole, Pontotoc, Garvin and Stephens Counties hold out promise of showing production in spots where the wildcatter has not yet found the pay. Lincoln County gives promise of more production and Pottawatomie is not without hope. It is asking much of Oklahoma, which has already produced 1,697,738,076 bbls., or as much as the whole United States produced from 1859 until well into 1908, a period of more than 48 years, to exceed its splendid record of 1924, but it is not beyond reason to say that it may do it.

The Burbank Field in Osage and Kay Counties led all Oklahoma pools during the year with a total of 30,805,856 bbls. Tonkawa, in Kay and Noble Counties was second with 22,413,740 bbls. The Greater Bristow Field, including Bristow and eastern Bristow and comprising 11 Townships in Creek County, produced 17,256,257 bbls. Cromwell, in Seminole County produced 10,296,711 bbls. and the old reliable Cushing-Shamrock Field in Creek County made a record of 8,743,287 bbls. Osage County, outside of the Burbank Field, produced 16,332,645 bbls.

Rich New Area

The biggest gain in production, and in reality the part of the State responsible for an output which more than offset any declines, was the area lying in Okfuskee, Seminole and Hughes Counties which, in 1923 showed a production of 6,048,425 bbls., but which in 1924 produced 19,337,693 bbls., an increase of 13,289,268 bbls.. The pools in this area are Deaner, Lyons, Cromwell, Papoose, Wetumka, Wewoka, Weleetka and Okemah, the greatest of which was Cromwell. Cromwell started off the year with a production for the month of January of 10,478 bbls., reaching its peak in August with a total for the month of 1,887,828 bbls. and closing the year with a December production of 1,267,032 bbls. The older Papoose, or Wetumka Field produced 23,250 bbls. in January and 932,232 bbls. in December, with a good chance of excelling even the December record this year.

The production sensation of the year was Tonkawa, wherein a pay sand below 4,000 feet was opened by Thomas B. Slick in May which, up to the close of the year, had produced 11,650,000 bbls. of oil which the industry did not know existed early in the year. This deep sand hit its peak output of 88,607 bbls. of high gravity oil on September 13. At the close of the year it was producing 79,500 bbls. a day.

The combined production of Burbank and the balance of the Osage Nation in 1924 was 47,138,501 bbls. as against 44,085,491 bbls. in 1923, a gain last year of 3,053,010 bbls. Outside of the Burbank production, which was not as great in 1924 as in 1923, production was kept up by the Wilcox sand production of the Pettit lease in the Hominy district and the Wilcox sand production in Township 25-9. For a time this remained as high as 15,000 bbls. a day.

The Bruner Pool, a development in a little town west of Tulsa, was in the main responsible for an increase of 579,293 bbls. production in Tulsa County over the record of the previous year. Tulsa County's production in 1924 was 4,096,838 bbls. and in 1923 3,517,545 bbls.

Okmulgee County gets credit for some production that should properly be credited to Creek County. This came from the Mounds Townsite, but as the Mounds Field lies in three counties, half of it being in Okmulgee County, it has always been carried in these reports, for convenience, as an Okmulgee County pool. The combined production of the Mounds, Beggs, Bald Hill, Okmulgee, Morris, Tiger Flats, Schulter and Henryetta Fields in 1924 was 7,164,543 bbls. as against 7,326,202 bbls., a decrease last year of 151,659 bbls., which would have been considerably more had it not been for the Mounds town lot wells. Okmulgee County's best year was 1920, when the production totaled 17,401,316 bbls. Much of the production that year was high grade oil which commanded a premium of 50 cents over the posted price of $3.50.

Creek County, wherein the Cushing-Shamrock, Glenn, Bristow, and Eastern Bristow Fields are located, produced in 1924, 29,594,300 bbls., a falling off of 5,117,224 bbls. from the record of 1923, when 34,711,524 bbls. were produced. The Bristow Field was at its best in 1923 and there was a general falling off in all the fields in that county last year.

The discovery of oil near the town of Stroud, in Lincoln County, was followed by the complete development of a small, but prolific producing area which put Lincoln County on the oil map with a production for the year of 3,716,661 bbls. Stroud reached the top in June when it produced 681,480 bbls. In December its output had dwindled to 96,875 bbls. and it was falling off with every weekly report from the field. It was a Wilcox sand development.

Pawnee County, one of the oldest oil regions in the State, which had been declining for years came back last year by reason of the opening of a prolific Wilcox sand area in the Otoe district in the western part of the county. There were only 10 wells completed in this sand during the course of the year but in December it produced nearly 9,000 bbls. a day and 281,370 bbls. for the month. The Jennings-Keystone area came in for consid-

(Continued on Page 188)

Production of Oklahoma, by Months, in 1924

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Washington County	220,441	206,161	223,014	213,480	223,634	213,330	208,010	207,452	198,420	204,228	196,200	182,435	2,496,805
Nowata-Rogers Counties	189,720	177,654	190,278	186,390	191,152	186,420	191,084	192,665	186,360	189,782	180,480	167,741	2,229,726
Burbank	2,416,357	2,964,264	3,080,718	3,175,920	2,697,744	2,754,570	2,611,626	2,337,865	2,229,510	2,274,160	2,136,150	2,126,972	30,805,856
Osage, outside of Burbank	1,037,725	984,405	1,306,650	1,307,340	1,675,519	1,386,480	1,610,977	1,679,022	1,539,459	1,317,090	1,280,010	1,207,977	16,332,645
Bird Creek, Owasso, etc.	149,575	139,664	149,482	143,310	148,552	143,070	160,164	149,575	145,980	147,064	136,890	127,534	1,730,860
Red Fork, Sand Springs, Bruner and Turkey Mountain	74,648	85,376	131,750	126,360	101,525	168,480	152,210	136,896	67,140	74,710	127,860	120,528	1,367,483
Bixby, Leonard and Jenks	70,308	64,119	68,572	66,030	67,983	65,460	65,007	63,457	61,350	62,341	59,670	53,320	767,617
Broken Arrow	21,390	19,952	21,173	19,980	19,840	19,470	19,437	18,848	18,180	18,569	17,640	16,399	230,878
Mounds, Beggs, Hamilton Switch and Youngstown	381,672	326,076	344,255	332,340	343,883	320,330	341,062	359,600	363,150	344,596	333,870	363,134	4,153,968
Bald Hill	81,065	63,820	76,570	68,880	70,772	67,230	73,315	73,036	66,720	68,789	77,640	68,510	856,357
Okmulgee and Morris	109,027	102,370	93,434	90,570	101,246	90,540	102,920	105,524	102,300	108,934	108,330	105,958	1,221,153
Henryetta, Schulter and Tiger Flats	71,920	69,397	86,769	81,300	82,563	80,420	80,538	77,372	75,000	80,030	75,510	71,486	933,065
Muskogee and Wagoner Counties	61,070	57,884	66,650	85,950	80,972	78,360	68,200	63,240	59,670	52,948	54,150	49,941	779,035
Wewoka	330,553	290,493	278,876	228,150	245,613	246,060	213,001	225,618	216,600	219,728	346,770	371,690	3,213,152
Cromwell	10,478	15,747	144,460	196,200	513,763	771,570	1,435,827	1,887,838	1,351,800	1,265,296	1,436,700	1,267,032	10,296,711
Deaner-Lyons	164,455	154,280	162,936	157,590	164,610	165,330	167,276	166,904	162,150	196,850	152,910	153,272	1,967,563
Okemah	23,870	19,430	16,213	19,350	18,662	17,970	13,671	13,485	10,950	7,936	7,950	7,781	177,268
Wetumka (Papoose)	23,250	15,805	34,565	27,840	68,696	229,320	291,245	345,898	400,710	443,734	708,630	932,232	3,621,925
Weleetka	8,928	6,351	6,665	6,030	6,200	5,940	5,642	5,332	4,980	7,037	41,580	56,339	161,074
Cushing and Shamrock	749,797	698,494	747,565	732,300	766,196	719,430	740,962	740,001	716,080	741,210	721,350	670,902	8,743,287
Glenn Pool, Sapulpa and Kiefer	307,582	288,753	308,419	298,260	307,086	297,930	307,241	306,931	297,480	307,241	297,180	271,653	3,595,756
Bristow, Kelleyville and Depew	1,211,976	1,174,761	1,290,096	1,369,980	1,345,741	1,325,610	1,336,534	1,257,577	1,233,420	1,207,357	982,980	993,705	14,729,737
Eastern Bristow	211,265	191,690	183,458	215,130	222,022	211,800	219,852	216,783	206,490	217,465	219,300	211,265	2,526,520
Cleveland-Keystone	132,277	124,642	133,145	127,680	131,564	127,230	126,325	130,758	135,270	136,710	127,890	124,310	1,557,801
Jennings	104,222	97,614	104,408	99,360	102,517	99,060	113,584	116,560	120,300	221,464	219,600	208,134	1,606,323
Otoe or Watchorn		22,678	24,025	31,590	50,096	70,350	51,151	105,741	129,720	197,191	241,370	254,975	1,218,917
Yale, Quay and Ingalls	169,725	158,949	170,841	163,680	167,958	163,200	159,526	161,385	165,900	168,121	162,820	146,196	1,932,312
March Pool (North Cushing)	55,335	51,794	39,866	36,030	36,859	36,210	36,146	36,332	37,290	40,176	39,150	36,735	481,923
Stroud	65,875	113,390	138,353	178,320	510,136	681,480	561,534	594,270	431,940	207,328	137,160	96,875	3,716,661
Blackwell and Deer Creek	65,565	76,864	86,862	84,330	86,932	83,100	109,058	128,526	98,250	93,806	107,640	105,524	1,124,457
Mervine	24,025	15,370	17,205	15,960	18,228	17,520	16,616	16,430	16,020	15,779	14,130	14,322	201,605
Braman									41,070	35,650	31,890	67,859	176,469
South Ponca	29,946	29,348	31,620	29,910	31,248	30,150	30,008	37,634	34,920	35,991	32,280	31,310	384,365
Tonkawa	1,227,414	1,113,774	1,107,220	1,058,730	1,091,541	1,100,220	1,160,733	2,193,343	3,121,010	3,143,989	2,894,340	2,191,326	22,413,740
Billings	16,647	16,820	18,414	17,700	18,383	17,670	17,143	14,787	13,650	13,268	12,930	13,454	190,866
Garber	165,726	151,670	163,711	154,590	161,882	156,300	155,062	154,008	148,830	153,543	144,900	138,911	1,849,133
Healdton	506,199	476,354	501,146	503,040	518,010	497,250	594,363	498,325	485,310	501,084	489,030	469,340	6,039,451
Hewitt	660,889	591,919	614,675	593,070	642,537	596,370	510,446	594,084	555,390	586,915	512,220	497,550	6,925,965
Tussy or Sholom Alechem				3,720	5,460	18,476	23,126	23,400	50,375	47,940	49,600		222,097
Loco-Milroy	78,213	72,503	77,252	77,910	79,019	76,530	79,794	80,507	74,430	78,089	74,370	73,191	921,808
Fox	83,049	87,754	93,348	98,310	96,589	93,600	89,094	87,420	74,550	74,958	81,150	79,484	1,039,306
Brock	30,070	26,158	24,862	33,300	29,367	28,260	32,736	28,954	34,860	37,975	45,870	43,958	396,369
Graham	397,885	365,400	447,764	503,550	489,366	502,380	428,978	396,614	379,260	391,096	349,080	341,279	4,992,652
Kilgore	6,231	5,887	3,875	5,280	6,076	5,850	5,270	5,270	4,260	4,402	5,760	5,797	63,958
Comanche	18,662	17,719	28,210	30,780	32,593	31,710	27,280	27,590	19,290	17,670	19,920	19,220	290,644
Duncan	263,717	246,471	256,711	240,150	249,922	240,330	241,645	240,901	220,560	226,083	216,720	214,334	2,857,544
Walters	34,720	32,364	34,069	33,090	35,216	33,600	34,813	34,224	31,920	32,984	30,660	30,938	398,598
Hambro (6s-5w)										19,685	15,960	15,252	50,897
Comgat	62,279	58,174	60,109	58,680	60,822	59,010	56,513	57,195	52,670	67,270	59,850	57,815	730,187
Robberson	140,523	129,021	124,217	119,040	114,328	110,280	109,802	112,499	105,960	106,299	98,370	93,496	1,354,835
Sayre	15,531	27,550	12,400	8,790	10,943	10,350	9,858	7,378	6,360	5,332	4,830	4,960	124,282
Allen	11,036	10,295	10,075	9,690	8,999	8,790	10,075	10,075	9,750	9,300	8,040	8,184	114,300
Total 1924	12,292,833	12,236,437	13,336,851	13,452,240	14,247,697	14,447,390	15,191,860	16,525,356	16,299,030	16,189,898	15,955,620	16,031,185	176,206,397
Total 1923	13,328,574	12,445,020	13,958,828	14,399,610	15,658,782	15,572,730	15,260,184	14,049,076	12,812,220	12,961,782	12,334,620	12,232,259	165,013,685
Difference	1,035,741	208,583	621,977	947,370	1,411,085	1,125,340	68,324	2,476,280	3,486,810	3,228,116	3,621,000	3,798,926	11,192,712
Daily average 1924	396,543	421,953	430,221	448,408	459,603	481,580	490,060	533,076	543,301	522,255	531,854	517,135	481,438
Daily average 1923	429,954	444,465	450,188	479,987	505,122	519,091	492,264	453,196	427,074	418,122	411,154	394,589	452,093
Difference	33,411	22,512	19,967	31,579	45,519	38,510	2,204	79,880	116,227	104,133	120,700	122,546	29,346

Big Well Average in Oklahoma in 1924

Number of Completions Fell Off Greatly But Several Fields of High Initial Production Were Developed. Deep Sand Discoveries

By George D. O'Neill

The outstanding features of 1924 in the history of oil production in Oklahoma were the low number of wells completed, the increase of the average initial production per well to the highest figure ever reached since statistics have been kept for the State, the remarkably rapid development of the Cromwell Field in Okfuskee County, the increase of production to new heights in a field of waning production by the discovery of a very productive sand by deep drilling and the development of new pools at Wewoka and Stroud.

The Gilcrease-Papoose Field in Okfuskee and Hughes Counties was undergoing development while the Burbank Field, one of the most important from a standpoint of total production developed since the days of the Cushing Field in Creek County, was the scene of renewed activity which in April nearly caused the field again to equal its peak production which occurred in July of the year previous.

During the year 1924 there were completed in Oklahoma a total of 4,814 wells, the lowest number since 1911, with the exception of 1915, when the figure dropped to 4,603. The decrease in the number of completions has been progressive since the beginning of 1921, the dropping off averaging about 1,000 wells per year, though the feeling of optimism which existed in 1922 caused an increase of 433 wells over 1921. As conditions seemed to go from bad to worse during 1923 and most of last year, wildcatting activity continued to wane, so that it is not to be wondered at that last year's completions were scarcely more than half the number recorded in 1920.

Despite the low number of completions during the year, the number of dry holes recorded remained comparatively high, the total being 1,308. This figure represents 27 per cent of the completions, comparing little better than the 29 per cent of failures in the previous year. Going back to the days when mostly all the oil produced in the State came from the shallow pools around Bartlesville, in Washington, Eastern Osage, Nowata and Rogers Counties, with a few pools in Tulsa, Okmulgee and Creek Counties, the average number of dry holes was less than half of what it has been in recent years. In 1910 the proportion of dusters was only 12½ per cent of total completions.

Big Wells in New Pools

Examining the table of completions given at the end of this review, it is notable that the Okfuskee-Hughes-Seminole district contributed by far the largest amount of the flush production of the past year. These figures were increased to 343,556 bbls. from the total of 52,580 bbls. of the year before by three pools. The Cromwell Field, in Eastern Seminole County, contributed a large proportion of this flush production, though the Gilcrease-Papoose Pool in Southern Okfuskee and Northern Hughes Counties, and the Wewoka Pool in Seminole County, also did a large part toward making the figure so high.

No important pools were developed in Creek County during the past year and the total initial production figures fell from 186,918 bbls. in 1923 to 93,158 bbls. in 1924, a decline of more than 50 per cent. This does not necessarily mean that the once most productive county in the State is passing into the category of has-beens, for a large number of exploratory operations were active at the close of the year in virgin territory and a number of smaller discoveries made.

Pawnee County's total initial production nearly trebled the 1923 figures when it rose to 20,915 bbls. With the opening of a new pool in Section 22-23-4 by Donahoe and others, near the end of the year, it is reasonable to predict a higher mark during the new year. The 1924 mark was reached largely through completions in the new Watchorn or Otoe Pool, in Townships 22-3 and 23-3, in the pool is owner by he Magnolia Petroleum Co. and the Watchorn Oil & Gas Co., and the owners are not forced to rush completions.

Western Fields Slowed Up

Garfield and Noble Counties show a combined initial production of 61,260 bbls., as against 201,700 bbls. in 1923, a decline of 140,440 bbls.

Kay County's initial production was 265,908 bbls., as against 391,287 bbls. in 1923, a drop of 125,379 bbls.

The Tonkawa Pool, which is located in the northern part of Noble County and the southern part of Kay County, was one of the two most productive pools in Oklahoma last year. During the early part of the year production was on the decline when T. B. Slick deepened his well on the Endicott lease in the southwest corner of Section 35-25-1w, and found a new producing sand at 4,060 feet. The first 24 hours the well flowed 2,870 bbls. and held up remarkably well for a long time, especially when it is considered that the new sand was in the Mississippi Lime. Other wells soon were drilled to the new producing horizon, and by the end of the year they had produced 9,300,000 bbls. of 42 gravity oil.

The Marland Oil Co. in May opened a new pool about 7 miles northwest of the Tonkawa Pool, when its No. 1 Thomas, in the SW cor. Section 15-25-2w, Kay County, found a sand at 2,061 feet, and at 4 feet in made 300 bbls. of oil a day and 15,000,000 feet of gas. Comar Oil Co.'s wildcat, No. 1 Duncan, NE cor. SW, Section 21-29-2w, northwest of the town of Braman, in Kay County, was the discovery well of a new pool which, at the close of the year, had seven producing wells, making a daily production of slightly over 2,000 bbls.

Osage's Good Record

Osage County was, as usual, a territory of interesting developments, and a large number of remarkably good gells were brought in. As most of the Burbank Field is in the Osage, a large number of completions within the county were made in that one locality. During the year there were 415 wells completed in the Burbank Field in Osage County and 591 in other parts of the county. The total initial production of the county was 284,734 bbls., a decrease of 10,409 bbls. over the year previous. Several small pools were opened, furnishing a goodly portion of the total completions, while the balance was made up of 173 dusters and 63 gas wells.

One Osage County pool which caused no small amount of interest was the Atlantic Pool, near Pawhuska. Discovered early in the year when the Atlantic Oil Producing Co. deepened an old gas well in Section 27-25-8, it made 3,380 bbls. the first 24 hours from the Wilcox sand and was the cause of some hasty drilling in the vicinity which resulted in a discouragingly large number of failures. After the excitement had subsided somewhat, a number of good producers were brought in.

The Pettit Pool, opened up by the Marland Oil Co. in Section 20-23-8, was another interesting pool in Osage County that almost broke into the major class when it made an average of better than 15,000 bbls. per day for about a week. The Superior Oil Corp. also made what appeared for a time as an important strike a few miles north of the Pettit Pool, when its well in the southwest quarter of Section 3-23-8, flowed 180 bbls. an hour for three days from the Wilcox sand. Another interesting well was the Barnsdall Oil Co.'s No. 16, SE cor. NE NW NW, Section 32-21-12, which flowed 4,300 bbls. the first day when drilled into the Wilcox sand.

Development of Stroud

Another pool in the Wilcox sand which was developed during the year was the Stroud Field, in Lincoln and Creek Counties. Starting the year with two wells making 2,000 bbls. daily, it underwent rapid development, the peak of production having been reached by the middle of June when it was making nearly 25,000 bbls. per day. Its decline was nearly as rapid as its rise, and by the end of the year it was producing little more than its average at the beginning of 1924. The rapidity of decline in Wilcox sand producers has frequently been pointed out, and Stroud finished a marked example demonstrating the fact. Tonkawa seems an exception, holding up much better than the average pool in that horizon.

Cromwell at Its Best

Most interesting of all oil fields in the Mid-Continent during the year 1924 was Cromwell, in northeastern Seminole County, with a few wells in Okfuskee County. While it did not produce as much oil as Burbank or Tonkawa, it was more spectacular from a point of view of human interest than either of the latter. Starting the year with Joe I. Cromwell's discovery in Section 15-10-8, and a 50-bbl. producer on what was found to be the edge of the pool, it underwent rapid development, especially after the Gypsy Oil Co. completed a 1,500-bbl. well in its west offset to the discovery well. By the middle of the year there were 33 producing wells in the field, and it was making an average of 33,000 bbls. per day. In August the field was at the peak of its production, and in that month averaged 60,898 bbls. a day. By the end of the year production had fallen to 35,000 bbls. daily from 235 wells.

Importance of Papoose

Attended by high hopes and many disappointments, especially in the first half of the year, the Gilcrease-Papoose Pool, in Okfuskee and Hughes Counties, was gradually becoming an important factor in Oklahoma oil production. Starting the year with two wells making a combined production of 400 bbls. per day, its immediate development consisted mainly of finding areas which were outside of the productive zone; in February its total production was only 15,805 bbls., an average of little better than 500 bbls.

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Producers, Refiners and Marketers Should Cooperate for Mutual Good

By EDMOND C. BREENE

President, Pennsylvania Grade Crude Oil Association

If I were to say anything in regard to the outlook for 1925, my mind runs along the thought that there should be more concordance among the various producers of the industry. Also the producer should be more concerned with the marketing of his product. That is, I mean to say, we should not cease to think any more about the barrel of oil after it reaches the pipe lines but that we should cooperate with the refiners and the marketers in endeavoring to see that the production was properly marketed. By keeping in touch with the marketer and the refiner, the producer could ascertain the demand and thereby intelligently control his production.

Edmond C. Breene

I can not appreciate how the Federal Government can assume under any present or existing conditions to attempt to control the oil business. Oil is property and the control thereof is within the power of the States. I do not think that it is proper for the Federal Government to appoint and command to aid the industry by helpful suggestions. The inherent selfishness of mankind is hard to control.

I believe at the present time there is more disposition among the various branches of the industry to be fair with each other than at any time in the industry and if the Government, instead of attempting to control the industry would permit the different branches of the industry to assess for the purpose of ascertaining the conditions of each branch, a great deal of good would be accomplished. The difficulty has been that there is too much ignorance on the part of the producer in regard to the refining and marketing ends of the business. Education in this along this line will accomplish more than compulsory laws.

New Pools Maintain Kansas' Prestige

High Average of Initial Production Marks 1924 Crop of Oil Wells. Annual Production is Nearly Up to That of 1923

By George D. O'Neill

While the number of completions in Kansas during the past year numbered 1,125 wells, 280 fewer than in the previous year, the total initial production was increased nearly 50 per cent. Dry holes registered a decline so that, except for the fact that the price of oil in Kansas was low, as in every other part of the country, the State had a very successful year.

From a total of 650 wells completed as oil wells, an initial production of 92,668 bbls. was obtained, an average of 158 bbls. per well. This is the highest average on record for the State, the next highest figure having been made in 1917 when the average was 119 bbls. per well from 2,766 oil wells. Last year's figures were increased to so high an average largely through developments in Cowley County, where several new pools were opened with wells coming in as high as 1,000 bbls. a day, and even higher.

Greenwood County contributed 39,381 bbls. to the State's total initial production of 92,668 bbls., all but about 10,000 bbls. having been recorded during the first half of the year. All but about 5,000 bbls. of Cowley County's flush production came during the last six months of the year, and, at the rate new wells are being started in the new pools, the first half of 1925 should witness a flood of oil from that county such as has not been seen since 1917 and 1918, when Butler County was at its best. That once famous county's total initial production this year was only 545 bbls., an extremely low figure even when compared to that made last year, when it marked up a total of 7,287 bbls.

Montgomery and Wilson counties showed an increase in activity, and their initial production registered a jump from 197 bbls. in 1923 to 12,575 bbls. in 1924, due largely to successful completions following the Red Bank Oil Co.'s discovery of a deep sand pay in Section 28-32-14, Montgomery County, early in July.

The Kors Pool, 7 miles southeast of Independence, was opened in September by Kors & Wilkins when they got an 880-bbl. well in the northeast corner of the southwest quarter of Section 12-33-16. Though followed at first by misfortunes, several other producers were later brought in. The Coffeyville or Lamb Pool, opened the year before, was developed, and in July, when it reached its highest production, was making more than 1,000 bbls. per day. In December the production of these deep sand pools had fallen greatly.

Following the completion of the Valerius Oil & Gas Co. and Waite Phillips Co.'s well in the western part of Russell County toward the close of 1923, other wells were started, and in June the Valerius Oil & Gas Co.'s offset came in, and swabbed 750 bbls. in 24 hours. Stearns & Streeter extended the producing zone to the northeast and west, while the Valerius Oil & Gas Co. was successful south of the discovery well. The total initial production during the year was 1,880 bbls. from eight wells.

Cowley's New Pools

Of the several new pools opened up or developed during the past year, the most productive by the close of the year was the rainbow Bend Field, in Cowley County, which, though discovered previous to the beginning of 1924, was not very far on in its development until the beginning of last summer. Located in the western part of Cowley County, 10 miles northwest of Arkansas City, it was opened and developed largely through the Waite Phillips Co. and its partners, the Independent Oil & Gas Co. and the Marland Oil Co. The producing horizon is found at a depth of 3,200 feet, and is generally thought to be equivalent to the Burbank sand in Oklahoma.

The Graham Pool, 4 miles northeast of the Rainbow Bend, was opened in August by the Alcorn Oil Co., when its No. 1 Graham, NE cor Section 9-33-3, found the siliceous lime at 3,507 feet, 319 feet below the top of the Mississippi, and when drilled to 3,518 feet flowed 946 bbls. in 24 hours.

The Winfield Pool, 3 miles northeast of Winfield, which previously had been producing from three different sands, came in for a considerable amount of attention when a fourth productive sand was discovered in October at a depth of 3,000 feet. Four wells drilled near the center of Section 24-32-4 by the J. A. Hull Co., and one by the Gypsy Oil Co. made good producers, one of them coming in for 1,200 bbls. per day.

T. B. Slick opened a pool in Section 19-32-3, when Slick's well, No. 1 Carson, in the southwest corner of the northeast quarter, started at 1,100 bbls. at a depth of 3,424 feet. The Carter Oil Co. started the offset diagonally southwest of the Slick well, and when it reached a sand at 2,602-14 feet, which Slick's well had passed by carrying a hole full of water, was brought in as a 1,000-bbl. well.

Greenwood Busiest District

Greenwood County was by far the busiest district in Kansas in 1924. More than one-third of the wells completed in the State were drilled in that county and about 45 per cent of all the initial production came from Greenwood County pools. The development of the Polhamus Pool was so great as to increase its production from 41,323 bbls., the total for January, to a top notch figure of 173,910 bbls. for the month of July, and in the closing month of the year it produced 143,550 bbls. The Thrall Burkett Pool also came in for a lot of work which increased its monthly production from 113,460 bbls. in January to a top figure of 301,165 bbls. in August, the year closing with the pool producing 228,718 bbls. in December. The Teeter Pool also showed a considerable increase in production in the course of the past year. The county, which is made up of eight pools, has been steadily increasing in production since it was discovered late in 1917.

Production of Kansas

The production of Kansas in 1924, 29,671,551 bbls., was 140,572 bbls. less than in 1923, which had shown the lowest production since 1919. The production of the past year was lower than in any year since 1916, or before the opening of the Towanda Field in Butler County, which shot production up to Kansas' high level. The 1916 output was 13,042,800 bbls.; that of 1917, Towanda's first year, 37,986,669 bbls.; 1918, 43,253,470 bbls., which was the peak in the State; 1919, 29,683,972 bbls.; 1920, 35,446,427 bbls.; 1921, 35,749,268 bbls.; 1922, 32,646 bbls., and in 1923, 29,812,123 bbls.

The comeback in the years of 1920 and '21 was caused principally by the new pools in northern Butler County and in Marion and Greenwood counties.

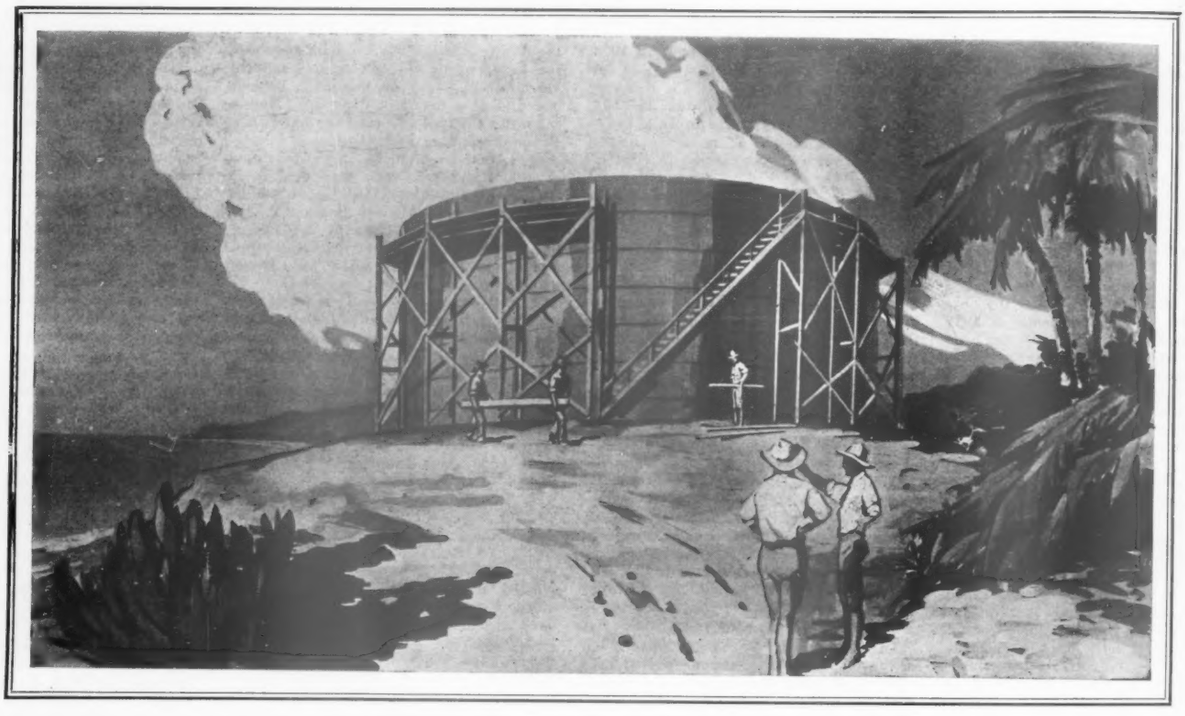
In the past year the old fields of Butler and Marion counties fell off considerably from their record of 1923. Marion County produced 2,333,176 bbls. in 1924 and 3,266,996 bbls. in 1923, a drop of 933,820 bbls. Butler County produced

(Continued on Page 188)

Production of Kansas, by Months, in 1924

	January	February	March	April	May	June	July	August	September	October	November	December	Total 1924
Marion County—													
Florence	69,378	63,858	68,324	69,540	69,378	67,710	64,046	49,631	47,640	52,049	46,950	46,438	714,942
Peabody	116,498	99,934	110,701	113,070	116,591	108,810	109,864	100,099	94,200	91,946	85,350	84,196	1,231,259
Covert-Sellers	31,713	29,029	22,351	29,940	37,882	35,640	38,037	35,557	29,970	33,108	32,190	31,558	386,975
Butler County—													
Elbing	128,588	132,414	124,496	123,600	132,525	117,330	122,853	119,009	107,430	111,972	109,080	108,592	1,437,890
Fotwin	16,988	17,139	17,763	17,310	19,313	14,310	17,825	16,275	16,350	14,670	12,680	13,919	195,442
Cameron-Robinson	24,025	22,185	24,521	24,450	24,366	20,280	28,551	24,490	21,330	23,963	21,870	21,886	281,917
Wilson-Dunkle	74,648	67,425	67,115	64,800	66,951	66,960	66,240	63,581	62,700	65,162	60,630	61,721	789,273
Towanda	111,383	103,588	106,951	104,070	115,041	108,600	111,910	108,996	107,460	105,834	96,550	92,225	1,270,708
Eldorado	209,746	198,708	198,431	208,680	214,334	202,140	214,923	211,420	201,900	206,584	195,120	198,431	2,460,417
Fox-Bush	126,387	121,481	132,928	117,810	128,030	99,240	94,519	98,425	89,890	97,402	87,120	87,203	1,380,435
Nuttle-Koogler	54,529	67,744	51,709	51,900	55,056	53,700	53,630	54,808	48,720	49,724	46,470	46,190	634,180
Bluse	15,128	13,920	15,996	15,300	16,213	14,250	16,616	14,787	15,690	15,903	15,060	15,190	184,053
Blankenship	45,167	45,269	44,981	39,330	41,509	35,940	35,960	34,410	34,320	34,317	34,170	32,697	459,070
North Augusta	41,540	35,960	39,711	37,650	39,959	40,200	36,064	35,650	36,240	38,440	35,610	34,441	451,485
South Augusta	72,757	63,916	66,660	69,720	69,533	74,250	79,422	68,727	63,780	75,082	69,960	71,145	844,942
Smock	6,820	6,177	7,626	7,590	8,928	6,810	6,541	6,685	7,380	8,091	7,170	7,068	86,866
Douglas	6,262	4,930	6,169	5,880	5,456	4,500	5,673	5,363	5,220	5,456	5,280	4,960	65,349
Leon Weaver	38,502	35,322	35,650	33,810	34,131	27,900	34,317	31,093	28,080	29,387	26,400	25,110	379,672
Greenwood-Woodson Counties:													
Virgil	208,010	176,233	192,820	172,110	190,340	186,810	184,946	189,379	177,840	182,156	176,460	181,846	2,218,850
Seeley	169,446	158,282	161,324	163,770	176,886	171,360	170,872	172,701	150,870	147,219	133,620	128,260	1,914,610
Thrall-Burkett	113,460	104,690	120,249	146,980	222,518	271,380	290,160	301,165	278,280	235,910	223,170	228,718	2,536,680
Sallyards	48,608	46,139	49,693	51,300	56,265	38,700	46,872	48,577	48,090	51,863	51,480	51,615	589,202
Teeter	41,137	33,031	29,791	33,810	32,860	45,300	54,033	59,706	68,160	80,228	83,340	83,421	644,817
Polhamus	41,323	73,863	92,287	118,260	119,846	130,050	173,910	155,155	161,430	157,294	143,550	143,034	1,510,002
Miscellaneous	4,030	4,118	4,340	4,200	4,960	4,170	5,022	5,890	5,250	5,270	4,740	4,681	56,671
Cowley County—													
All fields	67,673	60,175	66,464	86,580	114,460	126,570	199,950	228,191	.....	.....	.....	.....	950,063
Rainbow Bend	.....	.....	.....	.....	.....	.....	.....	.....	176,100	263,624	214,230	207,390	861,344
Slick-Graham	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,905	27,900	33,387	69,192
Rock	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,840	17,763	33,603
Clark	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,420	3,379	6,799
Eastman	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35,370	27,032	62,402
Winfield	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32,700	24,180	56,880
Miscellaneous	.....	.....	.....	.....	.....	.....	.....	.....	94,140	106,919	11,730	13,268	226,057
Other Counties—													
Rice	.....	.....	.....	3,450	3,100	2,210	2,294	2,129	3,420	3,193	2,970	2,914	25,690
Russell	3,565	4,930	5,983	8,940	8,587	18,630	29,047	27,280	26,700	34,658	32,760	31,186	232,266
Harvey	4,650	12,180	3,348	2,790	2,790	2,820	5,518	4,867	3,540	3,627	2,010	1,922	50,062
Chautauqua	81,840	76,444	81,406	78,300	79,918	74,670	77,283	79,484	76,920	74,803	77,190	77,841	936,099
Elk	16,182	15,254	16,058	15,840	16,492	33,120	32,891	26,164	22,590	23,653	24,510	24,831	267,586
Wilson	7,719	7,250	7,688	7,320	7,533	6,630	6,820	10,075	9,750	10,127	9,180	3,362	99,464
Montgomery	60,946	57,159	63,200	78,480	62,062	84,000	77,159	138,167	133,710	136,586	135,240	85,495	1,117,114
Allen	31,496	28,971	30,711	29,490	30,411	35,010	36,239	43,129	40,770	40,610	40,770	39,494	427,111
Neosho	25,761	24,099	25,699	24,930	25,854	25,410	26,102	26,164	25,320	26,040	23,070	21,824	300,273
Lyon	1,829	1,652	1,860	1,920	1,984	1,560	1,581	1,271	1,710	1,612	1,980	1,891	20,880
Miami	19,313	18,125	19,251	18,300	18,910	18,990	19,561	20,088	19,440	19,747	17,700	15,996	225,421
Franklin-Douglass	20,677	19,227	20,553	19,410	19,995	19,140	19,499	21,390	20,670	19,561	19,110	17,887	237,119
Bourbon	3,813	3,596	3,720	3,600	3,720	3,840	3,720	2,015	1,950	1,984	1,320	1,753	35,231
Linn	12,214	11,339	12,121	11,640	11,887	12,780	13,237	14,136	13,680	14,043	13,050	12,710	152,837
Anderson	48,360	45,414	49,910	49,080	50,561	55,440	55,583	59,605	58,650	59,241	49,830	48,732	630,406
Labette	1,767	1,653	1,767	2,790	2,790	2,820	1,643	1,674	1,620	1,612	1,560	1,550	23,246
Total 1924	2,223,878	2,112,853	2,206,426	2,268,540	2,459,765	2,469,380	2,671,053	2,717,398	2,638,900	2,768,485	2,597,466	2,527,443	29,671,551
Total 1923	2,638,975	2,360,288	2,588,531	2,624,430	2,852,217	2,797,830	2,448,566	2,316,320	2,234,730	2,336,346	2,268,840	2,345,150	29,812,123
Difference	415,097	247,435	382,105	355,890	392,452	328,450	222,487	401,078	404,170	432,109	328,620	192,293	140,572
Average daily production 1924	71,738	72,857	71,175	75,618	79,347	82,313	86,195	87,658	87,963	89,305	86,582	81,853	81,070
Average daily production 1923	85,125	84,296	83,501	87,481	92,007	93,261	78,986	74,720	74,491	75,366	75,628	75,650	81,677
Difference	13,387	11,439	12,326	11,863	12,660	10,948	7,209	12,938	13,472	13,939	10,954	6,203	607

STEEL PLATE



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Wortham-Richland Record of 1924

East Central Texas Maintains Its Reputation for Big Discoveries With Promise of More in 1925. Enormous Production

By George R. Kelley

In the matter of new production, the East Central Texas fields in 1924 presented a woeful spectacle compared with the previous year.

Four hundred and forty-four wells were completed in the course of the year and all the production came from the Powell, Richland, Currie and Wortham Fields, in Navarro, Freestone and Limestone Counties. The total initial production was 275,545 bbls. In the year 1923 the completions numbered 771 and the initial production 1,619,527 bbls. There were 149 dry holes last year or 16 more than in the previous year and 6 gas wells, or 3 more than in 1923.

The oil wells completed last year numbered 289 and their average initial production was 953 bbls. In 1923 635 oil wells were completed averaging 2,550 bbls. per well in initial production. In 1922 548 oil wells completed produced an average of 1,370 bbls. in initial production.

But while the several fields making up East Central Texas appeared on paper to have had a bad year, as a matter of fact the territory produced almost as much oil in 1924 as it did in 1923. Its 1924 record was 49,473,507 bbls. as against 50,786,282 bbls. in 1923 and 35,347,217 bbls. in 1922, and two new pools were added, one of which will have a big influence on the total production of the territory in 1925—that one being Wortham.

What Mexia Has Done

The East Central Texas area has been one of the most interesting oil regions in America since 1921, when Col. A. E. Humphreys, drilling on the geological advice of F. Julius Fohs, drilled a wildcat near the town of Mexia in Limestone County and opened a pool in September of that year that was a sensation. The same fall the Currie Pool in Navarro County was opened but it never became a prominent development. The production of Currie was included in the record with that of Mexia in 1921 and the two fields closed the year with a total output of 5,732,016 bbls. for a little more than three months. The following year Mexia and Currie produced 35,347,217 bbls. and in 1923 19,896,458 bbls. Last year the two pools produced 11,585,058 bbls. of which Mexia contributed 10,520,194 bbls. and Currie 1,064,964 bbls. Up to the close of 1924 the two pools had produced a total of 72,560,849 bbls. of which Mexia's contribution was fully 67,500,000 bbls. At the close of the past year there were 468 producing oil wells in the Mexia Field and 75 in the Currie Field. Both pools are good for many years.

Development of Powell

While Mexia was one of the greatest producing areas the country has known, a pool was opened in January, 1923, by the Corsicana Deep Well Drilling Co., a few miles east of Corsicana, and near the railroad station of Powell, which was destined to outdo Colonel Humphrey's discovery. The Powell Field produced 30,597,824 bbls. in 1923, most of which came after June 1 and in 1924 it exceeded its 1923 production with a yield of 33,274,449 bbls. Its total production up to December 31, 1924, was 63,872,273 bbls., and of this amount, all but 475,000 bbls. was produced in 19 months, a grand average of 115,518 bbls. per day. There were 768 oil wells in the field at the close of the year which would give them an average of over 81,200 bbls to the well. As the well cost less than $20,000 to drill, it will easily be seen that they have long since been on velvet.

The Richland Discovery

Keeping up its record of at least one pool a year, the East Central Texas area came through with a new one in 1924 when McDonald and others, drilling a wildcat on the Swink farm, near the town of Richland, completed a 200-bbl. initial producer. This was in February. The development was slow and the producion was carried with that of Powell until June when the field produced 129,330 bbls., or an average of 4,311 bbls. a day for the month. It advanced rapidly thereafter until it hit its peak in September with an average daily production of 22,630 bbls. Its largest monthly production came in October, a 31-day month, when it reached 696,663 bbls., or 22,473 bbls. per day. At the close of the year there were 89 oil wells in the field and the December production averaged 13,042 bbls. and was falling slowly, but steadily.

Then Came Wortham

But East Central Texas did better than one new pool in 1924. We must return to the hero of Mexia, Colonel Humphreys and to his skillful associate, Julius Fohs, to yield the palm for the latest great discovery in this big producing division. Fohs and his corps of geologists had been hunting up and down the Mexia fault for "another Mexia" or "another Powell." They tried the Bazeztte area north from Powell and the Humphreys interests drilled a gas well there and several dry holes. They tried farther northeasterly and with even poorer results. They could not find the spot. Then Fohs moved back to the territory between Mexia and Currie and made a minute examination of that territory to find the fault and when he thought he had it the Boyd Oil Co., of which he is an officer, clamped down on all the acreage it could find and drilled two wells, one on the Boyd farm in Limestone County, within view of the old Mexia Field, and the other 8,000 feet northerly in Freestone County on the Simmons farm. The well on the Boyd farm found the Woodbine sand and a 2,000-bbl. initial production late in November and a few days later in the same month the test on the Simmons farm was drilled in and it was a big well, starting off around 10,000 bbls. a day. In less than two weeks there were over 100 derricks up and most of them had been converted into drilling wells and by the close of the year the field had a production of 75,000 bbls. a day. It averaged only 780 bbls. in November, but in December, it averaged 28,818 bbls. a day. It was believed at the beginning that the field would be about one-half mile in with and 4½ or 5 miles in length, but since the close of the year the field has been narrowed down both in length and width, although not up to this writing altogether defined.

All the pools above mentioned produce from the Woodbine series, the pay lying below 2,900 feet.

While the new pool will not come up to expectations as a producer, either as to peak output or ultimate production, it will more than offset the decline in the older fields and when it settled down will undoubtedly be a consistent pumping field with a good average of daily production per well for years. It will have the record of being the swiftest developed field the world has known. It was possible to complete a well within 18 days from the time the derrick timbers were dumped on the ground and the field is expected to be an old story by the time the robins are on their way north.

After Wortham What?

The East Central Texas area is punctured with dry holes in attempts to open pools. Last year there were 80 dry holes drilled in Navarro County alone, 14 in Falls, 6 in Freestone, 6 in Limestone, 5 in Milam, 4 in Hopkins, 6 in Henderson, while Hopkins, Leon, Dallas, Rains, McLennan, Wood, Robertson, Williamson, Smith, Titus, Kaufman and Bowie Counties all saw the hopes of oil men shattered as deep tests failed to find the Woodbine pay. The previous year Powell occupied the attention of oil men to the exclusion of other districts and only 29 wildcat dry holes were drilled outside of Limestone and Navarro County, but 40 failures were recorded in Limestone and 64 in Navarro County.

The rush to find "another Powell" began in the spring of 1924 following the peak and the sudden collapse of the big production in Powell. Many thousands of acres were blocked up northeast of Powell, all the companies operating in Powell taking part in the mad scramble for blocks and smaller plots which had been carefully gone over by geologists. The summer campaign of wildcatting came to naught, the most promising strike having been the gas well of the Boyd Oil Co. in the Bazette area in northern Navarro County and it is that country which will get the next big play although there will be a lot of drilling down in Falls County and Southwestern Limestone County in the Kosse district and between the pools lying between the Powell and the Mexia fields. The greatest confidence is expressd in the opening of other big producing pools along the Mexia fault. The same high hopes are held at this time that actuated the oil operators of that district at this time last year, and they will back their faith with deeds just as soon as the excitement in Wortham dies down.

EAST CENTRAL TEXAS
Completions by District, 1924

	Comp.	Prod.	Dry	Gas
Wortham Field	14	86,645	1	..
Navarro County	36	188,900	80	4
Falls County	14	...	14	..
Freestone County	6	...	6	..
Limestone County	6	...	5	1
Milam County	5	...	5	..
Hopkins County	4	...	4	..
Leon County	1	...	1	..
Dallas County	5	...	5	..
Rains County	3	...	3	..
McLennan County	3	...	3	..
Wood County	2	...	2	..
Robertson County	3	...	3	..
Williamson County	1	...	1	..
Henderson County	6	...	6	..
Hunt County	2	...	2	..
Smith County	3	...	3	..
Titus County	1	...	1	..
Kaufman County	3	...	3	..
Bowie County	1	...	1	..
Total, 1924	444	275,545	149	6
Total 1923	771	1,619,527	133	3
Difference	327	1,343,982	16	3

Summary of Completions by Months

	Comp.	Prod.	Dry	Gas
January	48	11,573	7	1
February	44	4,982	24	1
March	23	61,622	7	..
April	47	28,270	22	..
May	55	20,566	19	..
June	27	4,260	13	..
July	54	15,526	11	1
August	38	9,117	14	1
September	37	12,535	12	..
October	19	7,868	6	..
November	24	13,421	5	..
December	30	76,805	10	..
Total, 1924	444	275,545	150	5
Total, 1923	771	1,619,527	133	3
Difference	327	1,343,982	25	3

Totals for Three Years

1924	444	275,545	153	6
1923	771	1,619,527	133	3
1922	864	750,770	300	16

PARISIANS PROTEST FUMES AND HONKING

Paris pedestrians demand that automobiles grant them two things—silence and free air. They assert that free air was the only thing remaining of the pre-war era, and now this is poisoned by noxious gases from the exhausts of the cars that clog the streets. Silence, they declare, they need at night, to allow their shattered nerves to recuperate.

Old laws, couched in fatherly language, requiring chauffeurs to blow horns gently so as not to dissturb the population and forbidding open cut-outs, have been resurrected by the police, who have been trying to move traffic in the congested streets, with considerable success. The police also have undertaken to purify the city of the gaseous fumes and to end obnoxious honking.

The slowness of traffic movement is held chiefly responsible for the bad fumes, for the thousands of motors running idle in the main streets quickly make the air bad, particularly for persons afoot. The situation also has affected the subways, for the fumes from the motors frequently sweep into the air ventilators on the street level and are sucked into the entrance. To counteract this the subway officials are preparing to send cars with ozone machines, through the tunnels periodically.

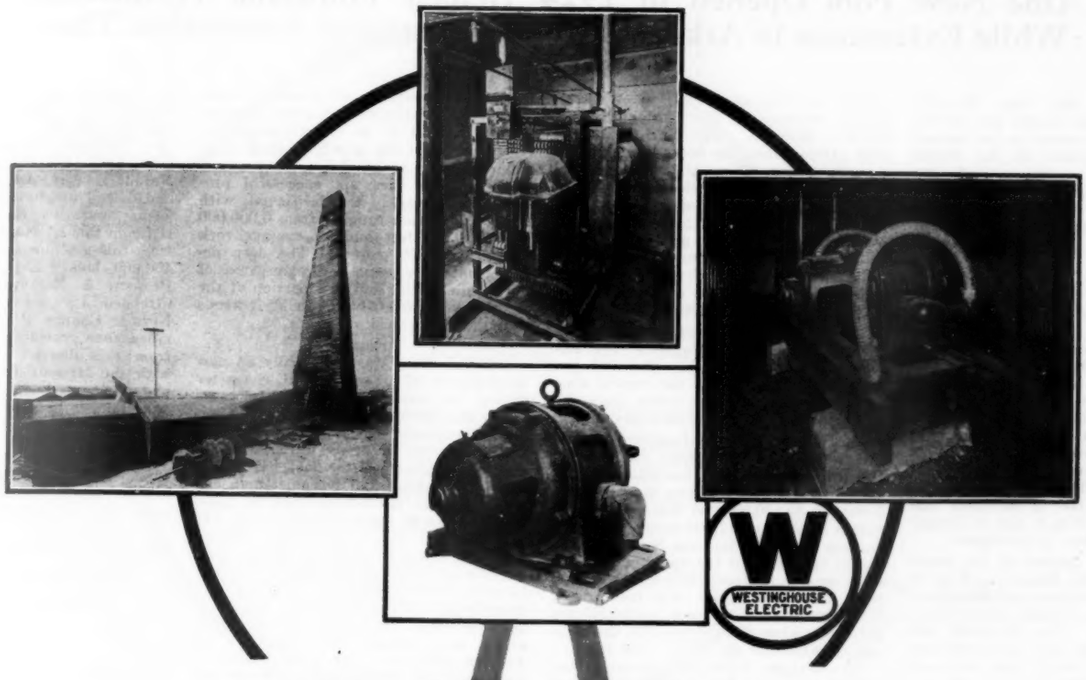
RUSSIAN OIL DEPOTS ABROAD

With regard to the Soviet regime of petroleum distribution details come to hand through a Russian agency. The "syndicate" states it now possesses reservoirs abroad as follows: London, for 15,000 tons; Hamburg, for 9,000 tons; Riga, for 4,300 tons; at Libau, for 1,800 tons, and at Reval, for 3,850 tons. Two tank steamers are in construction and others being quoted for. Trading in petroleum has now been organized with England, Turkey, Italy, Belgium, Germany, Austria, Holland and other countries. The quantity of petroleum sold abroad exceeds largely that of other goods exported.

MONTHLY PRODUCTION OF EAST CENTRAL TEXAS IN 1924

	January	February	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total 1924
Powell	2,967,103	3,110,540	3,898,157	3,514,710	3,196,286	2,804,730	2,658,684	2,459,230	2,358,450	2,342,398	2,077,260	1,887,001	33,274,449
Mexia	1,075,948	1,007,340	1,048,079	985,650	948,972	861,540	893,668	834,302	759,450	765,917	703,710	632,617	10,520,194
Currie	109,740	100,427	102,321	102,150	113,801	98,790	78,678	71,207	68,040	70,370	72,240	77,190	1,064,964
Richland	.....	.....	.....	.....	.....	129,330	380,338	584,319	678,900	696,663	543,750	404,302	9,417,502
Wortham	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21,240	893,358	914,598
*Corsicana	24,800	23,200	24,800	24,000	24,800	24,000	22,925	22,925	22,250	22,925	22,250	22,925	281,800
Total in 1924	4,177,591	4,241,507	5,073,367	4,629,510	4,283,859	3,918,390	4,034,193	3,971,984	3,887,090	3,898,173	3,440,450	3,917,393	49,473,507
Total in 1923	2,010,702	1,780,465	1,996,015	1,833,301	1,928,871	2,209,222	3,854,196	5,431,982	6,733,020	9,090,616	9,646,587	4,262,305	50,786,282
Difference	166,889	2,461,042	3,077,352	2,796,209	2,354,988	1,709,168	179,994	1,459,998	2,845,930	5,201,443	6,206,137	344,909	1,312,775

*The old Corsicana shallow pool is given on an average through the years.



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Louisiana-Arkansas' Enduring Fields

One New Pool Opened in 1924 Helped Louisiana Production, While Extensions in Arkansas Greatly Increased Production There

By M. L. Vaughn

SHREVEPORT, La., Jan. 26.—Although the year just passed has proved a comparatively dull period in the history of oil field development in the North Louisiana-Arkansas territory and has been entirely lacking in sensational features, remarkable results have been achieved and the enduring qualities of the field have been demonstrated beyond cavil.

Despite the fact that a majority of the new wells of the year have been small producers, with nothing like the number of gushers of the previous year, a record of production shows an even distribution throughout the year, with amounts equal and even exceeding those of the previous year and ending with an increase of 5,405,881 bbls. over the production of the most sensational year the field has ever known. The year 1924 started with an average production of approximately 55,000 bbls. a day in Louisiana and 155,000 in Arkansas and ended with 50,000 bbls. a day in Louisiana and 160,000 bbls. in Arkansas.

The outstanding feature of the year's development was the discovery of oil in Webster Parish, Louisiana and subsequent development of the Cotton Valley Pool, also in Louisiana. The discovery well of the latter district was completed late in the year 1923, but it was not until during the year 1924 that the pool was developed with any degree of success. The first gusher was completed on May 20, 1924, when the Ohio Oil Co. brought in No. 2 Hodges on the Bodcau Lumber Co. lease in Section 15-21-10, which flowed for six hours at the rate of 11,000 bbls. a day. The well was then closed in to put choker in the line and when reopened it refused to flow. It was finally bailed and flowed at intervals at the rate of 1,500 bbls. a day, 50 per cent oil and 50 per cent salt water.

During the remainder of the year, 66 wells were completed, of which 43 were oil wells with an aggregate initial production of 61,055 bbls. Despite this seeming successful development however, the daily production for the district never ran above 15,000 bbls. a day, reaching its peak in November, when it started falling off at the close of the year the average daily production was less than 6,000 bbls. a day. Combined emulsion and water content in the Cotton Valley wells ranges from 5 to 98 per cent and constitutes one of the major items of expense in this district. The cost of treating the oil runs as high as 15 cents a barrel, either by heat, or with oil-soluble tretolite.

Rich Gas Area

The Cotton Valley district now covers an area of approximately 8 square miles, the producing territory circling about one of the richest gas areas in the State. Gassers of from 35,000,000 to 60,000,000 feet are of frequent occurrence and the gas is being piped to distant parts of the State and to States adjoining.

Two other gas districts are being developed in the north end of Webster Parish, known as the Springhill and Gleason districts. The Springhill district extends into the north end of Bossier Parish in Townships 22 and 23, Range 11, and at the close of the year boasted 17 producing gas wells. The field covers an area of 8,400 acres with well defined limits, the production being obtained from the Blossom sand. The wells have a volume of from 35,000,000 to 50,000,000 feet and a rock pressure of from 850 to 1,220 pounds.

The Springhill district is served by four pipe lines, the Magnolia, the Reserve, the Oil Field Gas Co. and the Palmer Corp., but up to the present time very little gas has been taken from the field and for commercial purposes only.

The Gleason gas field centers around intersections of Townships 22 and 23, Ranges 9 and 10, and has 25 producing wells with a present open flow of from 5,000,000 to 40,000,000 feet. The field covers an area of 17,400 acres, with production from the Blossom sand, and the initial open flow of the wells in this district was from 10,000,000 to 60,000,000 feet, with an average rock pressure of 1,100 pounds. The rock pressure has been reduced to 850 pounds and the average thickness of the sand is 20 feet.

The Gleason Field is apparently well defined and is served by the same pipe lines as the Springhill district, the gas being used for commercial purposes only.

The Waskom gas field in central western Caddo Parish, and Harrison County, Texas, constitutes one of the most interesting developments of the past year in this territory.

The field covers an area of 34,080 acres with the following completions: 33 producing wells from Nacotach sand; 6 producing wells from Blossom sand; 1 producing well showing oil from Lower Cretaceous. There are 22 drilling wells to the Nacatoch sand, 5 to the Blossom and 1 to the Lower Cretaceous.

The initial rock pressure from the Blossom sand is from 800 to 850 pounds; from the Nacatoch, 375 to 415 pounds, with the open flow from the Blossom running from 6,000,000 to 42,500,000 feet and from the Nacatoch, 4,000,000 to 26,500,000 feet. The field is fairly well defined as to the Nacatoch production but not as to the Blossom. The average thickness of the Nacatoch sand is from 5 to 12 feet and it has been found that by going deeper than 2 feet into the sand the wells go rapidly into salt water.

Wells drilled to the Blossom sand have very little water trouble and the gas has a gasoline content of 400 gallons per 1,000,000 feet. There are two gas lines in the field, the Magnolia Gas Co., and the Southwestern Gas & Electric Co., who supply gas for commercial purposes only.

Deep Sand Gassers

An important feature of the year's development was the discovery of a second producing sand in the Em Grove gas district, in the south end of Bossier Parish.

Previous production had been obtained in this district at an average depth of 850 feet, while the new producing sand was discovered at 1,900 feet.

There have been six successful producers completed in the deep sand, with initial production ranging from 5,000,000 to 30,000,000 feet and an average rock pressure of 800 pounds. The deep development at present covers an area of but 1 mile in the southern portion of the Elm Grove district, but probably extends over the entire field.

Arkansas

Athough there was practically no new development of a sensational character during the past year in the Arkansas oil fields, there were a number of important extensions of producing territory and thousands of acres were added to the producing area of the field, particularly in the Louann and Norphlet districts.

One of the most important of these extensions was made by the Unity Oil Co. when its No. 1 Alphin in Section 24-16-16, came in with an initial production of 3,500 bbls. This well was located 3 miles west of Norphlet and opened up a territory which has since been developed until it almost covers the entire area between the Norphlet and Louann districts. The Louann district itself has been steadily extended throughout the year and there is still nothing to indicate that the limits of the field have been defined in any direction.

Third Sand in Smackover

Another development of interest in the Arkansas Field was the discovery of a third producing sand in the Smackover district. The first successful well in the deep sand was drilled by Clark & Melat in August, 1924. This well was located on the Murphy lease in Section 4-16-15, and came in at 2,268 feet, making 50,000,000 feet of gas and 15 bbls of oil, the oil increasing as the gas diminished, until at the present time it is making between 4,000,000 and 5,000,000 feet of gas and 25 bbls. of oil.

Further development of the deep sand resulted in the completion of a number of small producers and the successful deepening of numerous old wells, but many of these deep wells have sanded up or gone to salt water and the new sand is hardly regarded as a paying proposition. Probably the test of most interest in the deep sand was the Lion Oil & Refining Co.'s No. 5 Graves in Section 3-16-15. This well tested 35,000,000 feet of gas at 2,287 feet in the open hole, with a show of oil and a spray of salt water. After setting 4½-inch casing and drilling the plug, the well came in at 2,291 feet and flowed for one hour at the rate of 3,500-bbls. of fluid a day. A test of this production however, showed 95 per cent salt water and as it never made a paying producer, it was finally abandoned.

Most of the deep wells were drilled in the north end of the Norphlet district, or the south end of Smackover, where previous production had been found between 1,950 and 2,000 feet.

Nevada Developing Slowly

Development of the Nevada Pool, in Nevada County, Arkansas, has been slow and devoid of anything of a spectacular nature, but there is always a little activity in this territory and the production from this pool during the year aggregated 456,260 bbls. Early in the year, the Prescott & Northwestern Railway Co. extended its line from Reader to the Nevada County Pool, a distance of 20 miles, thus providing an outlet for the oil from this district. The road connects with the Missouri-Pacific line at Reader and is financed largely by north Louisiana lumber interests. Smitherman & McDonald have built a large steel treating plant at Reader and crude from the Nevada district is shipped by rail to the refineries. The oil tests only 14 Baume but is rich in lubricating qualities. No price has yet been posted for oil from this territory and prices are subject to agreement between producers and purchasers.

NORTH LOUISIANA-ARKANSAS

Completions by Districts, 1924

District—	Oil Wells	Dry	Gas	Total	Init'l Prod.
Bellevue	69	13	1	83	1,314
Caddo	29	11	2	42	3,448
Claiborne	2	4	0	6	70
Cotton Valley	43	4	19	66	61,055
De Soto	0	1	0	1	0
Red River	0	2	0	2	0
Union County, Ark.	568	80	33	681	152,637
Ouachita County, Ark.	526	32	15	573	51,551
Stephens	43	3	0	46	1,607
Nevada County	14	6	1	21	1,295
Arkansas wildcats	1	63	0	64	135
La. wildcats	3	78	142	223	530
Total 1924	1,298	297	213	1,808	273,343
Total 1923	1,555	367	228	2,150	846,311
Difference	257	70	15	342	571,949

WORTHAM OPERATORS COOPERATE ON FIELD

WORTHAM, Tex., Jan. 24.—Oil operators here have formed a committee with S. A. Judson as the temporary chairman and through the committee all are to work in cooperation to prevent if possible the raising of the level of salt water in the field and it is believed they will be able to prolong the life of the field.

John R. Lock, deputy supervisor of the oil and gas division at Austin in secretary of the new committee and major companies and independents are loaning their geologists and scouts to the committee to keep tab on the situation and work the problem out. The Atlantic Oil Producing Co.'s geologist, Mr. Winters, will have charge of gathering the data on which the committee will work.

The cross section of the field down to the salt water level is being worked out through logs of wells and the Bureau of Mines at Washington is to be asked to assist in carrying out the purposes of the committee.

Monthly Production of North Louisiana in 1924

District—	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bellevue	176,029	150,150	165,560	168,971	160,365	162,945	141,112	132,788	133,166	128,033	133,984	128,767	1,781,869
Caddo	294,383	286,625	301,119	357,887	342,695	417,925	369,904	356,617	352,435	340,997	350,049	370,391	4,141,027
De Soto, Red River, Sabine	111,816	105,530	111,701	107,213	133,170	130,185	108,982	110,385	156,702	107,150	137,949	143,326	1,464,109
Elm Grove	24,717	20,359	25,507	26,224	27,190	26,630	24,427	25,182	20,151	19,000	19,014	19,423	277,824
Haynesville	549,989	505,712	625,468	586,653	472,100	550,890	577,096	574,089	532,320	508,772	492,840	493,805	6,279,733
Homer	240,859	235,050	244,180	236,332	241,220	236,605	265,965	221,730	207,925	213,449	208,750	219,870	2,774,935
Cotton Valley and Webster Parish	677	7,816	15,039	27,863	25,105	92,430	113,879	168,082	166,074	182,652	360,895	219,696	1,380,108
Total 1924	1,398,370	1,314,242	1,498,574	1,311,142	1,401,835	1,617,610	1,601,365	1,588,873	1,568,773	1,500,053	1,703,481	1,595,278	18,099,595
Total 1923	2,272,641	1,911,560	2,204,319	2,136,590	2,125,298	1,986,283	1,668,922	1,738,790	1,580,760	1,624,431	1,610,190	1,422,910	22,282,694
Difference	874,271	597,318	525,745	825,448	723,463	358,673	67,557	149,917	11,987	24,378	93,291	172,368	4,182,099

Monthly Production in Arkansas in 1924

District—	January	February	March	April	May	June	July	August	September	October	November	December	Total
El Dorado	501,520	419,525	420,755	384,010	404,525	383,515	400,655	398,650	367,750	368,045	330,230	326,545	4,705,725
Smackover	3,158,360	2,784,120	3,278,610	3,566,845	4,136,367	4,267,268	4,080,964	3,846,356	3,551,010	3,500,551	3,028,450	2,949,019	42,147,720
Nevada County	.....	28,000	52,710	47,350	40,480	38,095	44,830	42,730	41,025	45,060	38,050	37,930	456,260
Stephens	26,800	71,105	130,620	70,020	77,745	67,565	71,520	71,505	69,750	70,040	64,320	67,017	858,007
Total 1924	3,686,680	3,302,750	3,882,695	4,068,225	4,659,117	4,756,443	4,597,969	4,359,241	4,029,535	3,983,696	3,461,050	3,380,511	48,167,712
Total 1923	3,222,605	2,740,024	2,978,802	2,873,830	3,219,319	3,463,227	3,713,738	3,292,580	3,165,900	3,120,274	2,973,000	4,017,850	38,766,149
Difference	464,075	562,726	903,893	1,194,395	1,439,798	1,293,216	884,231	1,066,661	863,635	863,422	488,050	637,341	9,402,763

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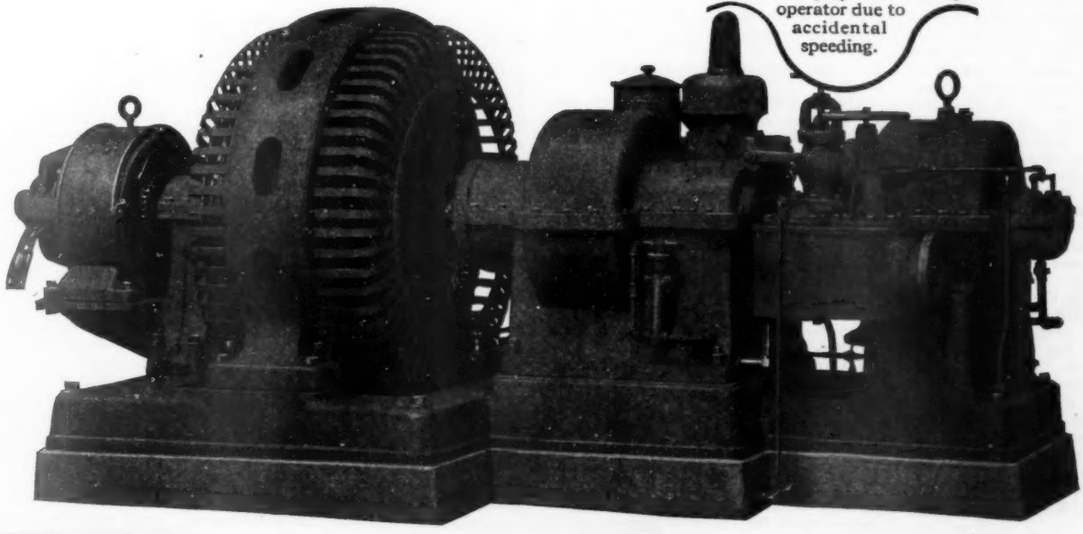

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Disappointments in Rocky Mountains

High Hopes of Important Pools Held in Early Part of 1924 Were Shattered by the Results of the Year. Big Drop in Production

By Frank B. Taylor

The year 1924 in the Rocky Mountain region started off with the oil men trying to find new fields even though a low market prevailed, Salt Creek crude being quoted at 60 cents per bbl. Most of the better looking structures had been tested in Wyoming and the operators were turning their attention to other States. The disappointments met within the preceding year in the wildcatting in Montana tended to turn the oil men in other directions and Colorado and New Mexico became the stamping ground of the scouts and geological corps. Some of the far-seeing had already entered New Mexico, the Producers & Refiners Corp. was active on the Rattlesnake Dome and the Midwest was drilling on the Hogback Dome on the Navajo Indian Reservation.

Colorado also was a magnet. The Union Oil Co. had drilled in the Wellington gasser causing a rush to that part of the territory and the wildcatting became general all over the State in a short time wherever a structure showed. Then the Shoshone Oil Co. brought in a 2,000-bbl. initial producer on Section 4-34-2 in the Sunburst Field in Montana and with this well, opened up a new pool of large capacity per well. This caused a return in part to Montana.

Lance Creek Comes Back

As 1924 opened, the Lance Creek Field in Niobrara County, Wyoming, staged a comeback. This field was first discovered in 1919 by the Ohio Oil Co.'s well on Section 36-36-65, which found oil in the Dakota formation at 3,635 feet and flowed over the ground for several weeks before being placed under control. Further development during the following years resulted in the finding of a few good producers and a large number of dry holes. Then the Ohio Oil Co. again brought in a big well after many of the operators had given up hope of seeing Lance Creek a large field and the new strike of the Ohio heartened them again. The field was shipping about 24 tank cars daily as 1924 opened. The oil from Lance Creek goes to Lusk, by pipe line, and is then loaded on cars for shipment to refining points. This factor works against the operators in Lance Creek on account of the overhead of rail shipments against the cost of crude sent direct to the refineries by pipe lines.

In Warm Springs County, Wyoming, the Utah Oil & Refining Co. found a black oil producer on the Black Mountain Dome, which lies about 40 miles east of Thermopolis. This is a new field in the Big Horn Basin and is in a territory spotted with small structures that have yet to be tested. The Utah's location is on Section 16-42-90 and the oil was found in the Tensleep sand at 3,500 feet, which is rather deep for black oil as the market is low. The strike started off with a 300-bbl. production daily.

Teapot Dome's Surprise

During the first month of 1924, Teapot Dome brought in a surprise. The Mammoth Oil Co., drilling one of the gas wells deeper on Section 33-39-78, found a third Wall Creek sand at 3,116 feet. The well started off at 800 bbls. production and increased to 1,000 bbls. when drilled in. The third Wall Creek sand was known in the Salt Creek Field, but this was the first producer drilled to that sand in the Teapot. One result was the drilling of several wells on the north line of the Mammoth lease, by outside firms and the sand was found productive in that area.

The Lakota sand lies under the Wall Creek sands and is also expected to be productive in Teapot. This sand has never been drilled to on the Teapot though the Midwest Refining Co. drilled three wells and the Producers & Refiners Corp. drilled one to it in Salt Creek in 1924, the Producers & Refiners found a duster but the Midwest wells were producers.

In January, 1924, the Mutual Oil Co. started a test near Hot Springs, S. D., that came in a dry hole and The Texas Co. drilled a dry hole on the Dutton Basin structure south of Moneta in Fremont, County, Wyoming.

Results in Moffat Field

During the early months of 1924, the Moffat Field in Colorado attracted much attention. The discovery well of The Texas and Transcontinental Cos. was shut in and several wells started by these two companies and other firms. The discovery showed water almost from the beginning and along in the summer other wells reached the sand to find it dry which dampened the ardor and drew in the limits of the field to only a relatively small area.

Wildcatters Start Confidently

The oil market advanced sharply early in 1924 and this factor promoted much wildcatting throughout the Rocky Mountatin region. The west end of the Cat Creek Field in Montana, considered a new productive area in 1923, failed to come up to expectations and while the California Co. got two good producers there, the pool was found to be small in area and spotted.

The Midwest Refining Co. and other firms became active on the North Casper Creek structure early in 1924, the Midwest started a wildcat that later found gas in the Frontier sand at 900 feet and then found production in the Tensleep sand at 3,225 feet at the close of the year. The Columbus Oil Co. on Section 3-36-82, got a duster about 2 miles from the Midwest well on Section 36-37-81.

The Utah Oil & Refining Co. took over the holdings of the Cretaceous Oil Co. in the LaBarge Field in Lincoln County, Wyoming. The Utah is a subsidiary of the Midwest and later on in the year, the Midwest moved in a rig and tools and started a deep test. A showing in the shale was encountered about 1,200 feet that stopped the work and the well is setting casing as the year closes.

In February the Buck Creek Oil Co. drilled into the Dakota sand on Section 3-35-65 in the Lance Creek Field at 3,605 feet and found a producer good for 300 bbls. This well, together with the Ohio's strike enlivened the work in Lance Creek, but subsequent drilling showed that the field was spotted and interest in it died.

The Salt Creek Field reported a dry hole for the Empire State Oil Co.'s well on the north edge of the field. This well limits the production to the south of Section 10-40-79 and the field is well defined as to the limits of production for the first and second Wall Creek sands.

The Midwest Refining Co. drilling on Scetion 26-1-20 on the Hepp Ranch, about 35 miles northwest of Billings, Mont., on the Lake Basin Dome found production in the Dakota formation and opened the Lake Basin Field. This oil is a light gravity paraffin base crude but thickens with cold to a grease that makes it a problem to produce.

The Producers & Refiners found a duster in the wildcat test in Weston County, Wyoming, near Thornton and abandoned it at 3,200 feet. The deep test of the Southwestern Petroleum Co., in Carbon County, Wyoming, was dry at 5,000 feet.

In the spring of 1924, the Producers & Refiners Corp. started laying a line from the Hatfield Co.'s well on the Eight Mile Lake Dome, south of Rawlins, Wyo., to Parco, to furnish gas for fuel to the refinery at Parco. 12 miles distant.

The Imperial Oil Co. of Canada, enlarged its refinery at Regina, Sask., and is thereby enabled to handle more crude. This plant takes its supply from the Rocky Mountain fields in the man and Sunburst Field in Toole County. Montana sends the bulk of its production to Regina.

Salt Creek's Decline

Salt Creek production dropped below the 100,000-bbl. mark in March. The decline has been steady and while the field has been falling in output, the operating companies have not endeavored to stimulate the production by a drilling campaign, preferring to let the wells drop off in order to hold the production back for a higher price. The gas pressure is the primal cause of the reduction in output and the Bureau of Mines has advised all operators that the gas should be utilized and not allowed to waste in simply flowing the wells. The Midwest, Ohio, Carter, E. T. Williams and other companies in Salt Creek have provided gasoline recovery plants and the Midwest is engaged in building a great electrical power station to be used in pumping the wells of the field by motors instead of steam.

The Prairie Oil & Gas Co. of Wyoming was incorporated and took over the Bair Oil Co., the Kasoming Oil Co. and merged on a cooperative basis with the Producers & Refiners Corp. This move places the parent firm, the Prairie Oil & Gas Co., of Independence, Kans., in control of the holdings of the above firms and the Producers & Refiners refinery and pipe lines.

The Utah Oil & Refining Co. took practically the entire production of the Cat Creek Field in Montana for its crude supply for its refinery at Salt Lake City, Utah. The Cat Creek production ran about 4,500 bbls. daily. What the Utah did not take was refined in plants in Montana with a few shipments to outside points.

Mammoth Oil Sued.

The Government brought suit in the Federal Court at Cheyenne, to cancel the lease made to the Mammoth Oil Co. by former Secretary Fall on the grounds of fraud. The Mammoth Oil Co. denied the allegation and the Federal Court at Cheyenne appointed Rear Admiral Strauss and Albert Watts as receivers for Teapot Dome. While the area is in litigation, the Mammoth Oil Co. turned over the dome to the receivers who stopped all development work except for the drilling of two offset wells on the north end and the producing of the wells already drilled.

The Absaroka Oil & Development Co. completed a deep test in eastern Montana on the Baker anticline. It is a dry hole and condemns the structure in the lower horizons. The Midwest Refining Co. completed a test on Section 11-17-104 in the Baxter Basin Field in Sweetwater County, Wyoming, through all the sands under the gas sand and found a duster. This condemns the Baxter Basin deep sands as far as oil is concerned.

The Liedecker well drilling on a wildcat structure, close to the southern boundary of Colorado, found a shale oil pocket that for a time promised a commercial well. This showing played out and later on, after drilling through all sands, the well was found to be dry. The Gypsy Oil Co. found a duster on the Tocito Dome in New Mexico and the Midwest Refining Co. developed the Hogback Dome in that State, having drilled eight wells so far, seven of which were producers.

The Sandard Oil Co. of Indiana completed an asphalt battery of stills at its Casper refinery and also placed a similar battery at Greybull for the refining of black oil crudes and the production of asphalt and fuel oils.

The Marine Oil Co. drilled a dry hole on the Sheldon Dome in Fremont County, Wyoming, for the second test on this structure and later in the year, the Mack Oil Co. took over the leases and started a third well that reached the Frontier formation as the year ended.

The Flynn Brothers' well on the Ragged Point Dome in Musselshell County, Montana, showed gas and oil when the drilling started after being shut down all winter. The well had not shown anything before and it created much excitement. Laer the showing fell to nothing.

The town of Lavoye, located in the heart of the Salt Creek Field, was ordered to vacate the land it is built upon, by the Federal Court, after a long trial. The Ohio Oil Co. has a lease upon the land and Louis Lavoye took up a homestead on a portion of the Ohio's lease. The Ohio wished to drill wells where the town was located but found that the town buildings prevented and then took the matter into the courts, obtaining a verdict against the residents of the place. The people are still living in the town despite the court order though the Ohio Oil Co. has the right to remove them when it so desires.

Opened New Pay Sand

The California Co., drilling a deep test in the western part of the Cat Creek Field in Montana, opened a new productive sand below the second Kootenai. Later developments showed that this sand is rather spotted like the second Kootenai in the west end.

The Potlatch Oil Co. started a deep test in the Sunburst, Montana, Field that was still drilling as the year ended. This well had reached a depth of 3,650 feet and encountered some gas in what is thought to be the Amsden sand under the Madison lime.

In Colorado the wildcatters were very active during the summer of 1924. The Ohio Oil Co. started wells on the Haystack and at Pueblo. The Midwest started a test on the Berthoud structure out of Boulder, and many other wells were started by local companies. The Pueblo, Berthoud, Haystack and the Yarg well at Moffat came in dry and were abandoned.

In July the oil market dropped and the Rocky Mountain producers considered a plan of prorating their runs so as not to flood the market with cheap oil. The Mid-Continent producers, however, were unable to reach a like agreement and as a result, the Rocky Mountain producers had to do the best they could without the cooperation of the Mid-Continent.

Community Plan Turned Down

The Union Oil Co. attempted to secure a joint lease from all land owners in the Fort Collins and Wellington Fields in Colorado, by which each landowner would receive a percentage of the royalty and which would enable the Union Oil Co. to drill the field without any offset wells and operate in the most economical manner. The plan fell through, due to disagreement of the terms between the landholders.

The Producers & Refiners drilled what is the deepest hole in the Rockies in Carbon County, Wyoming. This test went to practically 6,000 feet, but failed to find anything commercial. It was

(Continued on Page 106)

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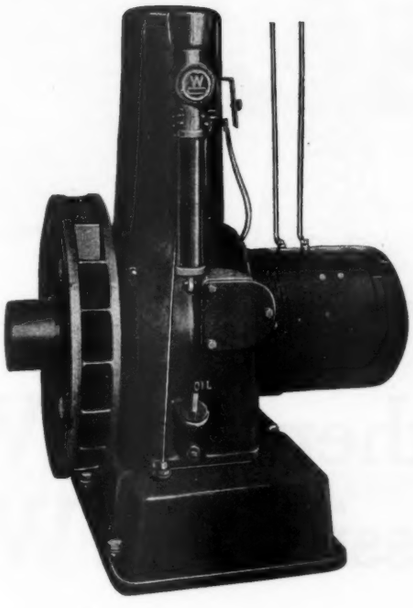

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INTERNATIONAL STEEL IDECO DERRICKS (GALVANIZED)

DISAPPOINTMENTS IN ROCKY MOUNTAIN AREA

(Continued From Page 102)

drilled below 3,000 feet mainly to furnish information for the geological staff of the company.

A showing of oil in the Shannon sand on the east side of the Teapot Dome created some excitement. In the fall of 1924, the well was drilled by Burke and others and found the oil about 970 feet.

The Utah Oil & Refining Co. struck a big gasser near Cisco, Utah, in the Dakota sand at 1,960 feet and shortly afterwards the well caught fire. The fire was extinguished about three weeks later and the well shut in and a second well is now drilling. The location is about 6 miles from Cisco and about 20 miles from the Colorado line.

The Prairie Oil & Gas Co. started operations in the Red Desert country in Southern Wyoming during the summer of 1924 and continued the work up to the close of the year without finishing any wells. This is a wildcat region with several known structures, but owing to its inaccessibility, it has not been prospected to any extent.

Structures Condemned

The Texas and the Transcontinental companies, drilling on the Moffat Dome in Colorado, brought in a duster on the north side of the structure on what is known as the Weyland lease and limiting the field still further. The wildcat drilled by the Midwest on Tisdale also came in a duster condemning that structure that for many years has been touted as a probable field.

The Union Oil Co. of California drilled in a dry hole on the Douglas Lake Dome in Colorado, thereby condemning what was considered a likely looking structure that lies between the Fort Collins Field and the Wellington Dome.

The California Co. struck a showing of light oil near Byron, Park County, Wyoming, which flowed over the derrick. Later, the well dwindled to nothing and it was considered that the bit had merely opened a pocket of oil and gas collected and held by fault. This well is still drilling.

As the year closed, the staistics showed a rather disappointing year, the low price of oil was a factor, but no large fields were brought in as was hopefully expected. Practically all the older developments showed declines in production, Sunburst, in Montana, being the only field to show a substantial increase. This was due to the new pool opened on Section 4-34-2.

Rocky Mountain Fields

Completions by districts in 1924:

Wyoming

District—	Comp.	Prod.	Dry	Gas
Big Muddy	1	172	..	..
Salt Creek	538	95,068	8	1
Lance Creek	7	4,415	3	..
Big Horn Basin	19	2,050	5	1
Lost Soldier and Carbon County	46	9,675	14	12
Rock River district	8	910	1	..
Fremont County	9	180	4	2
Osage	15	300	..	..
Lincoln and Uintah Counties	4	100	..	..
Baxter Basin	5	.....	3	3
Natrona County	9	425	4	1
Miscellaneous	3	.....	1	2
Total 1924	664	112,695	43	22
Total 1923	451	126,545	40	37
Difference	213	*13,850	3	15

*Decrease.

Completions by months:

Month—	Comp.	Prod.	Dry	Gas
January	30	7,970	..	..
February	30	4,192	6	..
March	30	7,595	2	..
April	37	11,989	4	1
May	57	15,711	..	1
June	54	10,003	1	..
July	80	13,760	6	2
August	78	7,525	5	4
September	110	17,238	1	5
October	58	6,047	5	3
November	57	6,450	6	1
December	43	4,215	7	1
Total	664	112,695	43	22

Montana

Completions by districts:

District—	Comp.	Prod.	Dry	Gas
Sunburst	138	23,419	38	4
Cat Creek and Misc.	32	4,325	20	4
Total 1924	170	27,744	58	8
Total 1923	248	14,688	75	11
Difference	*78	13,156	*17	*3

*Decrease.

Completions by months:

Month—	Comp.	Prod.	Dry	Gas
January	10	315	8	..
February	9	375	4	..
March	2	35	1	..
April	4	250	1	1
May	12	6,960	2	1
June	16	580	6	1
July	26	6,200	12	..
August	24	3,022	5	1
September	20	5,200	5	2
October	17	1,035	5	..
November	13	1,387	2	..
December	17	2,380	7	2
Total	170	27,744	58	8

Colorado

	Comp.	Prod.	Dry	Gas
All districts 1924	11	9,330	5	2
All districts 1923	2	500	..	1
Difference	9	8,830	5	1

Completions by months—

Month—	Comp.	Prod.	Dry	Gas
March	1	4,280	..	..
July	2	50	..	1
August	3	2,000	1	1
September	2	3,000	1	..
October	2	.....	2	..
December	1	.....	1	..
Total	11	9,330	5	2

Utah

Completions—	Comp.	Prod	Dry	Gas
1924	6	.....	4	2
1923	1	.....	..	1
Difference	5	.....	4	1

Completions by months:

Month—	Comp.	Prod.	Dry	Gas
May	1	.....	1	..
October	1	.....	..	1
November	1	.....	1	..
December	3	.....	2	1
Total	6	.....	4	2

New Mexico

Completions—	Comp.	Prod.	Dry	Gas
1924	13	2,307	2	..
1923	7	2,800	3	1
Difference	6	*493	*1	*1

*Decrease.

Completions by months—

Month—	Comp.	Prod.	Dry	Gas
May	2	1,047	..	..
June	3	600	..	..
October	5	565	2	..
November	3	95	..	..
Total	13	2,307	2	..

Total completions in all Rocky Mountain fields:

	Comp.	Prod.	Dry	Gas
1924	864	152,076	112	34
1923	708	144,533	118	50
Difference	156	7,543	*6	*16

*Decrease.

Rocky Mountain Production

The production of Wyoming for the year 1924 was 39,251,070. This figure was arrived at after a very careful check of the pipe line runs for the year and is considerably below the estimate made on the fields through the year. The remoteness of the fields from Casper makes it difficult to always accurately state the current production and a considerable time passes before the real results in the fields are known. The figures given below may be taken safely as the real results covering a period of a year:

ROCKY MOUNTAIN ANNUAL PRODUCTION IN 1924

Fields—	No. Wells Dec. 31	Prod.
Salt Creek	1,355	30,879,930
Teapot	62	990,370
Big Muddy	201	1,232,460
Grass Creek	336	1,090,360
Elk Basin	140	432,960
Torchlight	14	1,500
Greybull	13	11,580
Rock River	57	1,160,700
Notches	1	22,080
Lance Creek	27	720,630
Poison Spider	17	204,680
Osage	89	135,000
Hamilton Dome	21	248,000
Rex Lake	2	27,300
Lander	42	43,030
Hudson	33	43,900
Byron	9	17,160
Pilot Butte	27	21,220
Mule Creek	40	178,200
Lost Soldier	50	1,761,840
Ferris	11	28,270
Total for Wyoming	...	39,251,070
Cat Creek, Mont.	155	1,565,309
Sunburst, Mont.	214	1,220,415
Craig, Colo.	2	231,890
Miscellaneous, Col. & N. M.	...	241,832
Total Rocky Mt., 1924	...	42,510,516
Total Rocky Mt., 1923	...	45,064,421
Difference		2,553,905

Production by Months

January	4,447,039
February	3,996,251
March	3,827,204
April	3,738,332
May	3,866,010
June	3,638,634
July	3,768,398
August	3,749,375
September	3,330,007
October	3,058,268
November	2,788,110
December	2,302,888
Total 1924	42,510,516
Total 1923	45,064,421
Difference	2,553,905

SOUTH PENN ELECTION

PITTSBURGH, Pa., Jan. 26.—At the annual stockholders meeting of the South Penn Oil Co., the old board of directors and officers were reelected for the ensuing year.

BIG WELL ACREAGE IN OKLAHOMA DURING 1924

(Continued From Page 94)

per day. By May wells were coming in which increased production at a very rapid rate, and at the end of the first six months, 22 wells were making 7,405 bbls. daily. After the middle of the year development was not so rapid in proportion to what it had been in May, June and July, but by the end of the year there were 236 wells in the field producing 29,000 bbls. daily.

The Wewoka Field, south of Wewoka, in Seminole County, was extended and developed during the year, and on December 29 was holding production up to 12,781 bbls. from 102 wells. At the beginning of 1924 the field was making 12,000 bbls. from 27 producing wells, and at no time did the average daily production go very far above this figure. At the end of June it was producing 9,100 bbls. from 63 wells.

Good Discoveries in Tulsa County

Tulsa County had a number of very good wells completed within her boundaries, and the 151 wells completed as oil wells made an initial production of 30,313 bbls., an increase over the previous year's figures of 42 producing oil wells and 23,685 bbls., nearly 300 per cent of flush production. The Vern Pool, between Tulsa and Sand Springs, was discovered by the Echo Oil Co., in the southeast corner of the northeast quarter of Section 5-19-12, and had more than a score of wells producing from sand at a depth of 2,000 feet. The Bruner Pool, discovered in December of the year previous, was another Wilcox producer, and, while about 25 successful wells were completed, like most other fields producing from below the top of the Mississippi lime, declined rapidly and were put on the pump.

Carter County occupied a position of dwindling importance during 1924. The Healdton and Hewitt Fields were undergoing a steady decline though the latter provided some interest during the early part of the year when four wells, owned by the Carter Oil Co., were producing as high as 15,600 bbls., together. These wells proved a disappointment, however, and after having occupied a place on the front of the stage a few days, suddenly went dead. The Graham-Fox area underwent considerable development, and in April was averaging better than 20,000 bbls. daily. But development could not keep pace with decline, and by the end of the year production had declined to 13,000 bbls. per day.

The Scholom Alechem Field, also in Carter County, was the only development of any considerable importance in that part of the State during the year, and in October was averaging about 1,640 bbls. per day. At the close of the year it was holding up quite close to this figure.

Following is a summary of operations in the State of Oklahoma during the year 1924, showing wells completed in various counties, with total initial production of wells completed as producing wells, together with the number of failures and gas wells. Some idea of the relative activity during the year can also be obtained from the summary of operations for each month; appended is a summary of operations of previous years as far back as 1910:

OKLAHOMA

Summary of Wells Completed during 1924

County—	Comp.	Prod.	Dry	Gas
Washington	54	597	18	7
Nowata-Rogers	67	617	27	10
Osage	1,006	284,734	173	63
Tulsa	298	30,313	107	40
Okmulgee	410	21,117	171	51
Okfuskee, Hughes, McIntosh & Seminole	641	343,556	133	56
Muskogee & Wagoner	262	3,945	151	37
Creek	515	93,158	144	48
Payne	23	1,099	9	4
Pawnee	136	20,915	23	10
Garfield-Noble	72	61,260	24	11
Kay	399	265,908	49	23
Carter	377	42,346	60	31
Stephens-Cotton	181	2,262	68	35
Grant	10	25	6	3
Grady	37	....	20	17
Garvin	34	1,219	15	4
Marshall	10	20	9	...
Beckham	30	1,181	21	4
Lincoln	61	35,167	10	4
Sequoyah	4	....	3	1
Jefferson	19	826	11	3
McClain	1	....	1	...
Caddo	15	866	4	...
Love	3	....	3	...
Tillman	2	....	2	...
Kiowa	3	....	2	1
Oklahoma	1	....	1	...
Mayes	2	....	1	1
Coal	2	....	1	...
Logan	1	....	1	...
Comanche	3	....	1	...
Haskell	1	35	1	1
Washita	3	....	3	...
Bryan	2	....	2	...
Harmon	1	....	1	...
Pontotoc	12	375	8	2
Roger Mills	3	....	3	...
Pittsburg	4	....	4	...
Pottawatomie	1	6	..	...
Alfalfa	1	....	1	...
Murray	1	....	1	...
Custer	2	....	2	...
Jackson	1	....	1	...
Johnson	1	....	1	...
Total	4,814	1,211,446	1,368	446
Total, 1923	5,833	1,277,936	1,731	587
Difference	1,019	66,490	323	119

Summary of Wells Completed by Months

Month—	Comp.	Prod.	Dry	Gas
January	236	32,764	62	46
February	389	117,191	90	38
March	419	84,578	111	41
April	463	106,930	99	39
May	598	106,509	178	47
June	514	111,884	138	34
July	424	108,514	119	21
August	357	121,870	94	32
September	366	122,213	131	38
October	300	79,321	78	39
November	367	94,970	100	59
December	383	122,702	115	42
Total	4,814	1,211,446	1,368	446

Record of Previous Years in Oklahoma

Year—	Comp.	Prod.	Dry	Gas
1923	5,833	1,277,936	1,731	587
1922	6,148	1,190,165	1,423	671
1921	6,715	589,298	1,567	679
1920	9,097	773,900	2,036	753
1919	8,171	488,762	2,267	718
1918	8,367	372,308	2,100	733
1917	6,676	361,463	1,291	397
1916	7,700	518,888	1,136	558
1915	4,603	1,034,700	846	356
1914	8,297	973,550	1,324	529
1913	9,131	327,502	1,317	589
1912	5,982	213,217	820	444
1911	4,445	173,138	615	364
1910	4,370	179,973	647	391

NEW YORK PETROLEUM EXCHANGE IN SESSION

NEW YORK, Jan. 27.—The annual meeting of the New York Petroleum Exchange, Inc., resulted in the election of the following governors: Louis D. Pierce, Felix Renick, Robert K. Staley, G. W. C. Lomb, Carl K. Dreser, Ernest D. Daniels, H. S. Brandt, Jacob Roth, R. H. Davenport, Charles B. Peters, P. J. Burfening, Frank H. Knight, Jacob A. Husik, J. N. Walsh, A. Clifford Smith, William E. Walsh, Arthur S. Lyon, F. M. Willis, E. W. Voute, Leonce Arnaud.

In discussing the situation at the meeting Chairman John M. Walsh gave it as his opinion that the oil business is in a more healthy condition today than for several years and that for the next two months the change for improvement that has started will be marked.

"I question the advisability of the proposed regulation by the Government," said Mr. Walsh, "The business has already been subject to too much regulation without any effort at stabilization. Oil is of such importance that a move to conserve it is wise, but if the efforts toward conservation will tend to curtail production there can be but one result, and that is an increase in price.

"There have been many suggestions to curtail the volume of crude oil production, but there has never been one which was considered practical and which did not propose to take from the lease owner his rights as a citizen and land owner.

"I believe there is plenty of oil and that the many millions of internal combustion engines now in use will for all time be supplied with the necessary fuel."

TO USE BERGIUS PROCESS

A new company with a capital of 6,000,000 francs, and called the Societe Internationale des Combustibles Liquides, has just been formed at Luxemburg. The objects are set out to be exploiting connected with the hydrogenation and treatments of coal and other raw materials by the "Berguis" or any other process.

TO PAY INTEREST ON OIL

LITTLE ROCK, Ark., Jan. 24.—Representative Nivens has introduced a bill to compel all oil and gas companies to pay interest on all purchases of oils in the State, 60 days after sale, where payment for same was withheld owing to litigation or a defect in title of the owner. It was referred to committee.

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Trinidad Maintains Its Oil Production

May Not Reach Heights Formerly Anticipated by Some But Believed to Be Able to Supply Its Quota for Many Years

By N. O. Fanning

NEW YORK, Jan. 5.—The production of crude oil in Trinidad in 1924 is about 4,000,000 bbls., according to present authoritative estimates. Production during the first nine months was about equal to that of the entire year 1923, namely 3,051,000 bbls. In 1922 Trinidad produced approximately 2,500,000 bbls.

The following table indicates the growth of Trinidad's oil industry since 1911 (authoritative figures):

Year—	Persons employed	Feet drilled	Production (Imperial gallons)
1924 (est.)	.....	.....	140,000,000
1923 (est.)	.....	.....	106,785,000
1922	3,540	135,870	85,566,303
1921	4,735	116,860	82,395,595
1920	4,046	77,876	72,905,947
1919	2,425	68,059	64,436,632
1918	2,311	54,238	72,872,398
1917	1,857	52,037	56,080,914
1916	1,511	58,390	32,475,695
1915 9 mos	1,291	40,053	23,489,362
*1914/15 .	1,276	57,969	36,753,931
*1913/14 .	1,209	41,933	22,523,060
*1912/13 .	801	42,552	17,626,583
*1911/12 .	1,208	40,418	9,985,748

*April 1 to March 31 in each year.

It would appear from results so far obtained that Trinidad will not reach the heights as an oil producer anticipated in the past by some, but that the industry will consolidate and continue to give its quota for many years. This is the opinion expressed by a geologist conversant with the Trinidad fields, who says there are undoubtedly some structures in other areas in the island at present untested from which commercial production will eventually be obtained. The gain in 1924 production is not due to new pools, however, but mainly to the further development of areas already proven.

The following gives a summary of the activities of the various companies operating in Trinidad during 1924:

Trinidad Leaseholds

Trinidad Leaseholds continued work on its Forest Reserve main field and the Bernstein sector, and the Barrackport Field, from which its production was obtained. The company commenced drilling in the Guayaguayare Field in the southeast of the island, where many geologists who have worked the island favor results. The nondevelopment of the southeast of the island would appear to have been caused by lack of transport facilities, roads being costly to build owing to the irregular topography and high wood nature of that undeveloped part of the island.

At the recent annual meeting in London the chairman said production at 204,203 tons was easily the highest obtained during any year in the company's existence, and showed an increase of 60,158 tons on the preceding 12 months. The greater part of this increased production had been secured from the eastern portion of the Forest Reserve area, known as the Bernstein Field. Shallow wells on the western portion of Bernstein had been sunk and results had exceeded early expectations. In addition, they had drilled some rather deeper wells towards the eastern end of this section, and good results had been obtained. One well came in towards the end of September with an initial production of 500 tons a day, and another with 200 tons a day a little later. Both were now producing about 100 tons daily. In the main Forest Reserve Field —the western section—further progress had been made in extending the proved area of productivity. Provided proper precautions were taken to protect the oil sands from the ingress of water, there was little need for anxiety, although the cost of drilling was increased in wells where water was encountered. So far as they could see today, they ought to be able to maintain their output at about the present scale for some considerable time to come, although there might be fluctuations. During the 4½ months which had elapsed since the close of the past financial year they had produced 96,650 tons, or an average of 21,500 tons per month. During the year under review 329,674 tons of crude oil were treated at the refineries, or 73,914 tons more than last year, an increase of 29 per cent. Alterations and additions to refining plant made during the year have greatly increased its capacity, and it is now in a position to handle up to 1,500 tons of crude oil per day.

Trinidad Central Oil Fields

This company's production is obtained from the Tabaquite Field, where a shallow drilling program has been continued during 1924. The company has commenced operations on its Cruse Syndicate property on the flank of the Parry Lands structure, where operations were discontinued in 1914.

Apex (Trinidad) Oil Fields

Operations of this concern during 1924 were confined to its holdings in the Fyzabad area, where the area from which production had previously been obtained has been extended by drilling.

Petroleum Development Co.

This company's operations have been confined to the Parry Lands structure, although production has been obtained from wells previously drilled in the Brighton and Vessigny fields.

British Controlled Oilfields

This concern commenced drilling operations in the reclaimed Oropoche Lagoon, where its No. 1 well came in at an estimated output of 700 bbls. daily in March. It is drilling additional wells in this area.

General Petroleum Co. of Trinidad

Drilling operations were continued by this company on the Bernstein structure. A wildcat well was commenced in the Penal area near Siperia on a well defined structure. Favorable indications have so far resulted but the well is being continued for a deep test. Results indicate a new area of development is possible.

Kern Trinidad Oilfields

This company continued drilling operations on a minor fold north of the Parry Lands structure. A new field has been opened up by this company several miles east of the pitch lake, where production is obtained at shallow depths, around 600 feet.

Trinidad Esmeralda

A third well was drilled on this company's properties during 1924 resulting in a dry hole and operations were suspended.

Petroleum Options

A well is being drilled by this concern about 1 mile east of the Apex Co.'s production, on the extension of the same structure, but no results have been obtained yet so far as is known.

There are several other companies either operating or suspended of which nothing of note can be said at the present time.

Subsurface Conditions

Subsurface conditions in Trinidad are similar to those in many of the California oil fields. Loose lenticular sands are the rule with high gas pressures, and although in certain areas water sands are met with at various horizons in the oil producing zones the fields have not yet been shown to be limited with edge water. In certain cases wells have been drilled and good production obtained hard on the flanks of the structures.

Rotary drilling is used in all fields except for the Tabaquite Field of the Trinidad Central Oilfields, Ltd. In this field the formation is harder and a light gravity oil is obtained. The wells are drilled by cable tools, using portable rigs. The Apex Co. favors the use of screens to overcome the sanding up trouble and have had good success, but this practice is not carried out by other companies owing to the sand conditions varying in the different fields.

The major production is obtained from wells 1,000 to 2,500 feet deep, although in certain parts of the Forest Reserve structure good production is obtained from about 500 feet. Little deep drilling has been done in the producing fields and the deeper possibilities in these fields are still an uncertain factor.

Conservation Regulations

The operators of Trinidad cooperated with the local government towards the end of 1923 with a view to framing and carrying out regulations for the benefit of the industry regarding conservation of oil and gas resources. An office was established at San Fernando, the nearest town to the various fields, where production and water intrusion problems are being investigated by F. M. Zeigler, oil field water inspector, late of the California Bureau of Mines, and C. A. P. Southwell, Government geologist. At this office peg models of the various fields have been built and field data collected and correlated for the benefit of the operators concerned. This work, based on the experience of California, is expected to be of great benefit in the event of any water problems causing a sudden decline in production of any of the main fields.

Pipe Lines

The following are the present pipe lines of Trinidad:

1. From the Fyzabad Field and Barrackpore Field to Point-a-Pierre.
2. From the Los Bajos Field and the Parry Lands Field to Point Fortin.
3. From the Parry Lands and Vessigny Fields to Brighton.
4. From the Tabaquite Field to Claxton's Bay.
5. From Wellington Village to Claxton's Bay.
6. From the Fyzabad Field to the Los Bajos Field.

In addition to these main lines there are several smaller lines running direct from the oil fields to the sugar estates for the conveyance of fuel oil.

Altogether there are some 100 miles of main pipe lines in the island, the longest being that of the Trinidad Leaseholds, Ltd., from Fyzabad to Pointe-a-Pierre, about 26 miles in length.

Wayleave is charged on all oil pumped through pipe lines running along public roads and the Government Railways. Fees are also charged for crossing public roads, the Government Railways and the foreshore with pipe lines.

Refining

Crude oil is refined at four refineries, the range of products including all grades from motor spirit to road oil. No lubricating oils are at present manufactured in Trinidad.

Accompanying is an official analysis of crude oils produced in Trinidad.

				Fractional distillation—										
Area—	Specific Gravity at 60° F.	Water per cent	Initial boiling point °C.	Below 100 °C. per cent	100-125 °C. per cent	125-150 °C. per cent	150-175 °C. per cent	175-200 °C. per cent	200-225 °C. per cent	225-250 °C. per cent	250-275 °C. per cent	275-300 °C. per cent	Remarks—
Fyzabad	.871	*	..	10.0	8.0	8.0	5.0	5.0	6.0	8.0	9.5	11.0	Well sample. Asphaltic base.
Fyzabad	.971	1.0	..	*	0.5	1.5	1.0	2.0	2.5	4.0	6.0	10.0	Well sample. Asphaltic base.
Fyzabad	.925	0.5	..	1.0	4.5	4.5	5.0	3.5	5.0	7.5	9.5	11.0	Average sample for one month.
Parry Lands...	.891	...	42	8.0	6.0	8.2	2.8	4.0	4.5	4.5	4.0	8.5	Well sample. Asphaltic base.
Parry Lands...	.945	...	..	0.5	1.0	4.3	1.2	4.5	2.5	5.0	5.0	10.0	Well sample. Asphaltic base.
Parry Lands...	.927	2.0	..	2.5	3.0	6.5	2.0	4.5	4.0	4.0	6.5	11.0	Average sample for one month.
Point Fortin..	.918	1.4	..	3.0	4.0	6.0	2.5	4.5	5.0	4.5	5.5	6.0	Well sample. Asphaltic base.
Point Fortin..	.953	0.05	..	0.5	1.5	3.5	2.5	2.0	3.0	3.5	4.5	8.5	Well sample. Asphaltic base.
Point Fortin..	.924	0.7	..	1.5	2.0	6.5	4.0	4.0	5.5	4.5	7.0	10.0	Average sample for one month.
Los Bajos....	.848	...	..	4.0	12.0	16.5	8.0	7.0	8.5	7.5	5.0	6.0	Well sample. Mixed base.
Los Bajos....	.979	0.1	..	...	...	...	...	†	1.0	3.5	5.5	9.5	Well sample. Mixed base.
Los Bajos	.931	0.2	..	*	1.5	5.0	2.5	5.0	6.0	7.0	8.0	13.0	Average sample for one month.
Tabaquite ...	.800	...	55	5.2	7.8	10.7	7.8	9.2	8.6	8.5	7.5	7.3	Waxy crude. Typical well sample.
Tabaquite ...	.814	...	52	6.0	9.4	13.7	8.8	7.8	6.2	6.4	5.9	5.5	Nonwaxy crude. Typical well sample.
Barrackpore ..	.908	0.5	..	2.0	4.5	5.0	3.5	4.0	3.5	5.5	8.5	11.5	Well sample. Asphaltic base.
Barrackpore ..	.937	1.0	..	1.5	2.5	3.5	2.5	2.5	4.5	4.5	6.5	9.5	Well sample. Asphaltic base.
Barrackpore ..	.925	1.0	..	2.5	4.0	4.5	3.0	3.0	4.0	5.0	7.0	10.0	Typical well sample.
Vessigny	.987	1.86	..	...	1.7	0.3	0.7	1.4	2.2	3.7	6.6	18.5	Well sample. Asphaltic base.

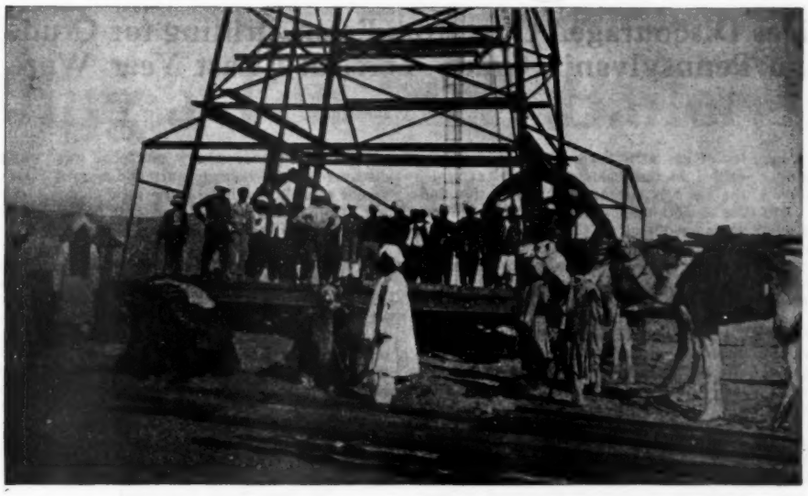
*Trace. †Slight trace.

GERMANY BUYS LESS LUBS

Figures of declining imports of lubricating oils into Germany indicate that the Cello (Hanover) crude oil discovery last March resulted in increased local production sufficient to affect the sales of imported lubricants in this market. Germany imported only 24,405 metric tons of lubricants in the third quarter of 1924 (of which 78 per cent, originated in the United States), against an average of about 68,000 tons in each of the first two quarters of the year, of which about 70 per cent, originated in the United States. Generally speaking, imports of other petroleum products have not been adversely affected, as the output of the local wells is utilized only for the production of lubricants.

FRENCH AUTO AND OIL TAXES

Automobiles suffered the brunt of increases in duties provided by the new French tariff bill, which affects practically every commodity imported into France excepting foodstuffs. Automobiles, whether bare chasses without tires or finished cars ready for the road, will pay from 1,800 to 3,600 francs per 100 kilograms weight, according to the size of the car. Spare parts are assessed at from 900 to 2,250 and from 3,600 to 7,200 francs per 100 kilograms, according to classification of metal, whether of castiron, steel, copper or bronze. Light oils for motor fuel, benzols and naphtha are assessed at 7.50 francs per 100 kilograms, while the heavy fuel oils testing 190 per cent, are exempt.



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Easterners Sought Gas Rather Than Oil

Low Prices Discouraged Operators From Drilling for Crude and the Results in Pennsylvania Grade Territory Last Year Were Meagre

By D. S. Wakenight

Operations and developments in southwest Pennsylvania, West Virginia and southeastern Ohio in 1924 differed very little from the previous year. At no time were there any high lights in development work, not a new pool having been discovered. Neither were there any appreciable extensions to the old fields. There were not as many wells completed, by 216, as the preceding year. The new production was 166 bbls. less and 66 dry holes and 10 gas wells fewer than in 1923. The activity of the gas companies prevent a greater discrepancy between the number of wells completed. Some of the oil companies took an active part in this kind of work and did little or nothing in the way of trying to increase their oil production. In fact, none of the large operating companies had as large a production at the close of the year as at the beginning and the few oil wells completed were so small that they did not supplant the declining production in the old wells.

At no time during the year, except for a period from January 30 to May 10, was the market high enough to revive development work in the deep territory. No sooner had operators begun to respond to the advanced market than it again declined and with it operations began to fall off and lethargy again took the place of considerable activity. The market continued on the down trend until it reached the low of the year, $2.75, and remained at that point almost to the close of the year, when it advanced to $3. The highest market of the previous year was $4 and the lowest $2.35.

From the beginning to the close of the year there were only a few large wells and no gushers completed. Contrary to expectations the largest well completed is located in the old southwest Pennsylvania fields in north Strabane Township, Washington County. It is a fourth sand producer, located on the R. G. Lutton farm. The well had an initial production of 400 bbls. but declined rapidly. A fourth sand well in the locality was not anticipated, since it was regarded as Gordon sand territory. In the opinion of some, the first well on the Lutton farm was the forerunner of a new fourth sand pool. If such it proves to be, it will of necessity be small. All through the year the gas companies continued the search for gas in Greene County and the result was fairly successful. A few of the wells completed were far above the average in volume.

Beaver and Allegheny Counties completed very little new work and the aggregate of new production was very small. The lowest new production record in the southwest fields was in December when it amounted to only 3 bbls. The highest was in September when it totaled 86 bbls.

Deep Wells Attracted Attention

On Chestnut Ridge, near Ligonier, Westmoreland County, the Peoples Natural Gas Co. had been testing for gas in a formation deeper than hitherto known. During the past six years this company has drilled three deep tests. The first is located on the Booth & Flinn property and got a good flow of gas at 6,822 feet, but they had the misfortune to plug the hole. The second well is located on the Seger Brothers' farm and by midsummer had reached a depth of 6,880 feet without finding anything and was abandoned. The third well is the second test on the Booth & Flinn property and at a depth of 7,428 feet struck a light flow of gas. The gas carries a large percentage of hydrogen sulphide and unless the gas can be separated from the hydrogen sulphide it will be worthless as a commercial product. In the hope of finding a better quality of gas at a lower level the well was drilled 14 feet below that level at which the gas was encountered. Hope for finding something lower down had not been abandoned and at the close of the year they were still drilling in a close, hard formation and making slow progress.

West Virginia

Very little effort was made to discover new producing territory in the West Virginia fields. More gas wells than oil producers were completed and the new production amounted to 3,422 bbls. No new pools were discovered and there was no appreciable extensions to the old fields. The work outside of the gas territory was very much on the routine order, drilling odd locations in territory long since defined. If at any future time new producing territory is discovered in West Virginia it will be in some of the lower counties which have not been fully tested. At some time or other all of these lower counties have had more or less test work but there are still large areas that have not been condemned. Past experience has demonstrated that a single dry hole does not prove the territory in any direction to be worthless for any considerable distance. The search for gas is continuous and the gas companies are exploring continuously in the lower counties and may reveal a new pool.

During the year a new gas pool was discovered in Nicholas County and several recent completions have had a good showing of oil in the Maxon sand (the gas is found in the Big Injun) and the Hamilton Oil & Gas Co., composed of New York capitalists, are hopeful of uncovering a pool of oil east of its present operations. Raleigh County is known to hold gas territory but is remote from a market and nothing has been done in the past three or four years in the way of development work. No new oil producing counties were added to the West Virginia producing list during the year. The gas companies supplying gas to western Pennsylvania and eastern Ohio will continue to look to West Virginia for the major portion of their supply.

No Deep Wells Completed

For the first time in a number of years no very deep wells were completed in West Virginia. At the present time there are two drilling, both with a view to going deeper than any other wells ever drilled. The one is the Hope Natural Gas Co.'s test on the Joseph Gordon farm, located near Terra Alta, Portland district, Preston County. By the close of the year it had reached a depth of 3,000 feet and was delayed with a fishing job. In Union district, Harrison County, the Reserve Gas Co. is drilling what is intended to be a very deep test (unless oil or gas is found in commercial quantities in some of the upper sands) on the Chapman Smith farm. By the close of the year they had reached a depth of 2,500 feet. The rig and equipment at this test is made twice as heavy as that used in ordinary drilling and it is claimed, barring accidents, that with this outfit it would be possible to drill to a depth of 10,000 feet. Whether or not the test will reach that depth it is proposed to drill as long as it is a physical possibility. In all previous very deep tests, with a few exceptions, fishing jobs have been encountered and the hole abandoned.

Southeastern Ohio

The southeastern Ohio fields did not complete as many wells as West Virginia but the new production amounted to more than twice as much as that of West Virginia and southwest Pennsylvania combined. The Clinton or deep sand territory was responsible for 80 per cent of the new production brought to the surface during the year. A little pool of shallow territory was discovered in York Township, Morgan County and furnished some very creditable producers. It covers a small area and is thought to be defined. This was the only strictly new pool discovered during the year. In the deep territory operations were not pushed with much vigor but enough good wells were completed from time to time to give southeast Ohio a wide margin over West Virginia. The total new production in southeastern Ohio amounted to 8,185 bbls. Explorations were carried into Holmes County with satisfactory results, but the low market precluded an intensive drilling campaign. The East Ohio and Central Ohio gas companies are large holders of territory and have completed some good gas, as well as oil wells. When conditions improve, Holmes County will be one of the first to respond with increased operations. Development work was fairly active all through the year in the shallow territory and the completions, except in Morgan County, uniformly light. The Berea grit furnished more new production than any other shallow territory.

An Innovation in Licking County

The discovery that the Trenton Rock was a producing formation near Newark, Licking County, was an innovation that attracted attention. The discovery was made when W. W. & A. T. Wehrle drilled down to the Trenton Rock a dry hole on their own farm. The result was a producer with an initial production of 90 bbls. Previous to drilling this well the Trenton Rock was not considered a producing formation so far east. The fact that somewhat of a mystery was made of the Wehrle well when first completed only served to intensify interest in the well. By the close of the year, three more wells had been completed in that locality, two of them duster and one a light producer. The cost to drill to the Trenton Rock pay is heavy and the contemplated rush to drill down to that formation failed to materialize. At the close of the year there were but two wells drilling for production in the Trenton Rock. One is a second test on the Wehrle farm and the other the Carter Oil Co.'s test on the Tish farm. In the meantime, while operations were going forward in the vicinity of Newark, the E. H. Everett Co. drilled down a well in Newton township, Licking County and failed to find production. If at any time the Trenton Rock is to become a factor in furnishing new production, the large companies will have to do the development work. The outlay is so heavy, about $30,000 to complete such

(Continued on Page 272)

BRADFORD AREA LED ALL PENN. FIELDS IN COMPLETIONS IN 1924

OIL CITY, Pa., Jan. 26.—Except for the fact that there was continued activity in the flood district of the Bradford Field in McKean County, there was little exceptional interest during 1924 in northwestern Pennsylvania and New York.

The completions in this territory totaled 2,000, which is a decrease of 100 from the previous year. New production credited to these completions aggregated 3,977 bbls., which is a decrease of 1,923. Dry holes totaled 126, a decrease of 9, while gas wells decreased 27, or from 101 to 74.

There was an increase in completions amounting to 17 in the Allegany, New York Field, but the new production there decreased by 364 bbls.

Operators in the Bradford Field in McKean County, Pennsylvania, and the Allegany Field in Allegany and Cattaragus counties, New York, while they accomplished more in the way of completed work in 1924 than in the previous year, fell far behind the program they had mapped out at the beginning of the year. It was expected that more wells would be completed in the Bradford-Allegany fields, which really are one field, only the State line dividing the two, than in any year since the early days of the development. Both fields have been subject to the flooding method of recovery for years past but a year ago it was planned to make a veritable sieve out of the big 100,000-acre structure. The program was well under way when the crude market price began to drop and the continued low price of oil caused a curtailment of drilling and a postponement of the big campaign until the market warrants the investment. A total of 1,053 wells were completed in the Bradford Field and 289 in the Allegany Field a total of 1,342 new wells of which 49 were dry and 2 gas wells. The completed wells do not include the water wells drilled to let in the "flood."

The Middle Field comprising southwestern McKean and Warren, Elk and Forest counties had a big drop for the year as the result of the complete ending of activity in the Tidioute Field in Warren County. Completions there totaled 73, a decrease of 186, and their new production was 162 bbls., a decrease of 1,626 bbls.

In the Venango Clarion district there were 428 completions, a decline of 88, while the initial production was 517 bbls., a decrease of 143 bbls.

The Butler-Armstrong district reported 157 completions and new production of 331 bbls., decreases of 43 completions and 1 bbl. in production.

New producing territory is practically impossible to find in this territory which has been drilled over for so many years and the wells that are completed are so small as not to pay for the drilling at the prices of oil, at the close of 1924.

No new pipe lines of any consequence were laid during the year but the work of dismantling the property of the United States Pipe Line Co. was continued. This company possessed 316 miles of double trunk line composed of 4, 5 and 6-inch pipe connecting Franklin and Marcus Hook, which was sold. Of the total 214 miles of single pipe line was sold in the ground for future use as pipe lines as follows: National Transit Co., Franklin to Oil City and Titusville to Warren; Pure Oil Pipe Line Co., Oil City to Warren; United Refining Co., the 4 and 5-inch lines from Warren to Bradford; Vacuum Oil Co., Olean to Olean Junction; Pure Oil Pipe Line Co., Bethlehem to Marcus Hook. The remainder of the pipe line was sold as second-hand pipe and of it 60 miles is still to be taken from the ground.

NEW YORK AND N. W. PENNA.

Summary of Completed Work in 1924

Field—	Comp.	Prod.	Dry	Gas
Allegany	289	532	3	0
Bradford	1,053	2,435	46	2
Middle Field	73	162	11	7
Venango-Clarion	428	517	29	44
Butler-Armstrong	157	331	37	21
Total 1924	2,000	3,977	126	74
Total 1923	2,100	5,900	135	101
Difference	100	1,923	9	27

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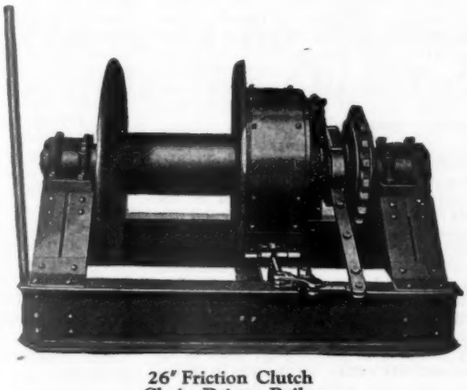

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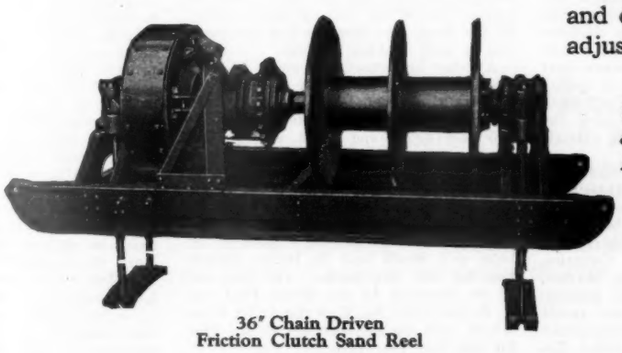

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The Past Year in the Southern States

Kentucky's Development Held by Low Market Price. Numerous Small Extensions Made. Work in Tennessee and Mississippi

By Vern T. Whitney

BOWLING GREEN, Ky., Jan. 26.—Embracing the entire producing area in Kentucky the year 1924 showed a total of 1,605 completions of which 368 were listed failures and 61 were gassers. The new production was 25,599 bbls. In comparison with the figures of 1923, when 1,943 completions were reported, 471 dry holes, 80 gas wells and a new production of 33,692 bbls., there was a decrease all around. The production for the year just closed was 8,093 bbls. less, while 388 fewer completions were reported. The gas wells showed a decrease of 19 and dry holes 103.

Western Kentucky proved to be the most active with 969 completions, 14,653 bbls. of new production; 305 dry holes and 17 gassers, while in eastern Kentucky 636 wells were finished, of which 63 were dusters and 44 gas wells. The new production amounted to 10,946 bbls.

Despite the fact that a better price is paid for crude in the eastern portion the above figures will show that the bulk of the activity was on the west side, the shallowness of the pay in that area having been an incentive, as wells could be operated at a smaller cost than in the eastern area.

Little Pipe Line Work

Very few extensions were made to pipe lines throughout the State during the year, only a few laterals having been laid. In the Idamay district, in the Lee-Owsley County area, several miles of pipe line was added, as well as in the Weir sand fields, in Lawrence, Johnson and Magoffin Counties. In the western sector the Emery-Moore Pool, the Gorby & Hall Baker Pools in Barren County were connected with the gathering lines of the Paragon Development Co. In Allen County, the Inter-Cities Oil Co. at the close of the year finished a 10-mile line from the Wheat district to the Mt. Aerial and Stringer localities. Several minor extensions were made in the Cumberland-Monroe district, the Owensboro Field and in Warren County.

Western Division

At the beginning of the year 1924, producers in the western Kentucky field looked forward to the new year with hope of better things than 1923 had brought. For a few months it seemed that their hope was well founded as the Indian Pipe Line Corp. completed the first line through the field connecting with the Indian refinery in Illinois. Previously oil had been gathered and shipped out in tank cars.

With the completion of this trunk line, the Indian voluntarily agreed to cancel its old contracts providing for 32 cents under the Somerset prices and early in the month the price of crude began to mount. There was an advance of 20 cents on January 10, another 15 cents on January 19, 25 cents on January 25 and 15 cents on January 30. The best price of the year was on March 11, when western Kentucky light brought $2.36, an advance of 90 cents over the price of January 1.

A Discouraging Market

At $2.36 crude oil can be produced at a profit in this field, due to shallow drilling and low cost of operating, so operators were encouraged to begin much new work. An unusually late and rainy spring retarded new work somewhat, and real development was just getting under way when, on May 10, a bomb was thrown into camp by the announcement of a 31-cent cut in prices, explained by reports of general overproduction coupled with threats of prorating.

This squelched the ambitious producer, and when, on May 27, a change in the manner of purchasing crude from this field to a gravity basis was seen to really amount to a further substantial cut in the returns, about all the wind was taken out of his sails.

Through the summer drilling declined until, at the close of the year, activity in western Kentucky reached the lowest point in its history.

The first half of the year showed 479 completions, compared with 733 during the first half of 1923, while the last half showed 490 completions, compared with 550 in the last half of 1923. The new production during 1924 was 14,653 bbls. against 24,593 bbls. in 1923, a loss of 9,940 bbls.

Year's Features

Important features of 1924 were the opening and continued steady development of the Emery-Moore Pool in Barren County; extensions of the McLemore-Gillispie-Price Pool in Warren County; discovery of an important shallow pool in the Richpond section, also in Warren County; extension of the Kerley Pool and the opening of the new Walker sector, both in Allen County, and the finding of a new producing sand below the Pencil Cave in the Cumberland-Monroe County Field.

Of these, the Emery-Moore Pool has undoubtedly contributed more to oil development the past year than any other section of the field. Here a new producing horizon was opened from 180 to 200 feet below the Devonian black shale, giving an oil better than 42 gravity, exceptionally high for this area. In spite of dullness in surrounding pools, 150 wells were drilled in the Emery-Moore district, of which 136 were producers. The success of this work stimulated drilling in nearby sections and 1924 was really the banner year for Barren County.

Wildcatting Shows Decrease

Wildcatting fell off and although 12 outside counties were tested no new territory was opened. Monroe County was the greatest tempetation to the wildcatter as the good production along Kettle Creek in the extreme southeastern part of the county led to attempts to extend production to other sections. Twenty such attempts, pretty well covering the county, were all dry, leaving Kettle Creek the only producing area.

Fifteen other tests were made, all drawing blanks. These were distributed as follows: Three in Hardin County, one which was carried 1,400 feet below the shale, one of the deepest wells in the State; Henderson and Owen Counties, two each; one each in McLean, Marion, Grayson, Larue, Taylor, Green, Edmonson and Todd. Although the net result would seem discouraging information gained in the tests in Owen, Hardin, Edmonson and McLean Counties indicates that producing sands are present and further tests are warranted. At present all wildcat tests are shut down.

Small Decrease in Production

Oil run from the field showed some decline from the previous year. Runs in 1924 averaged about 114,000 bbls. per month as against 120,000 bbls. a month in 1923. Warren County shows a decrease of 10,000 bbls. monthly; Allen County runs decreased approximately 7,000 bbls., while Simpson remains practically the same. Increases are noted in the Owensboro district, comprising Hancock and Ohio Counties; in Barren County, Cumberland and Monroe Counties, while Hopkins County comes as a new productive area.

Taking up the year's work by counties the old Davenport Pool in Warren County has contributed very little. Attempts to extend this area to the northeast have ceased, although there is nothing to indicate that the northern limit has been defined. At present the New Domain Oil Co.'s J. W. Lowe marks the extent of production in this direction. To the south deep tests on the Logan and Simpson County end of the structure have proved disappointing, the latest failures being two on the Walters lease, a half mile west of the McLemore-Gillispie-Price Pool. T. A. Sheridan's well on the Georgianna Davenport farm, west of the main part of the Davenport Pool, completed in October, is one of the best wells of the past year. It is in the shallow pay, in the Mississippi lime, rated good for 1,000 bbls.

In the McLemore-Gillispie-Price Pool, continued drilling has brought good results, but has not broadened the limits of the pool to any great extent.

The new Richpond Pool, discovered by Roy Hogan late in the summer, has been the area of greatest activity for the past few months. The pay is found at less than 500 feet and the wells came in with flush production ranging from 12 to 60 bbls. The pool, 7 miles south of Bowling Green, now covers about 200 acres on which over 30 wells have been successfully completed.

Allen County

Allen County for 1924 has two new pools, both in the southern half of the county; the Kerley Pool opened in the early fall by Neil & Huebring and the Walker Pool opened last spring by C. H. Andrus and E. H. Millett. In the Kerley Pool about 40 wells have been drilled. The pay is found from 50 to 90 feet under the shale and the crude tests 28 to 32 gravity. Latest completions have apparently bounded the pool. The territory included in the Walker Pool is almost entirely owned by Andrus & Millet who have nine wells producing. Pay is found immediately below the shape, producing oil of 45 gravity. No. 5 Walker, finished in July for 380 bbls., was the biggest well of the year in Allen County. It has been continuously on the pump and is now making 20 bbls.

Another important happening in Allen County was the finding of a deeper pay sand in the Frost Pool, the oldest producing belt in Allen County, at about 115 feet below the black shale. Formerly a sand at a maximum depth of 40 feet below the shale was the only productive horizon. The most recent well drilled to the new sand was the White Plains Oil & Gas Co.'s No. 3 Hornbuckle which showed a flush of 288 bbls. and which held its initial production for over two weeks. The first well to be deepened in the Frost Pool was R. A. McCain's No. 4 on the J. W. Frost which held up consistently at 20 bbls. for the past four months.

Owensboro Field

The Owensboro Field in Hancock and Ohio Counties is one of the districts to show a good increase in production. In January of 1924 the pool was producing around 5,000 bbls. and in October it made 12,768 bbls. from 105 producing wells, an average of about 4 bbls. to the well. The total increase for the year will run in the neighborhood of 86,000 bbls.

Numerous attempts were made to extend the producing districts, but little was accomplished. Twenty-four dry holes were drilled without appreciably broadening the field. No wells out of the ordinary were brought in. Three small ones at Collier Station, 1½ miles east of Whitesville and a fair producer on the Swope Brothers' farm, 3 miles south of the Herbert school house district, serve to open up new productive areas to be drilled at some later date.

Barren County

Barren County had its big play last year. One of the oldest producing counties in the State, its territory had been pretty well drilled over with only meager results until the late Lewis Emery, Jr., of Bradford, Pa., and Fred Moore of Bowling Green, Ohio, opened a pool 2 miles west of Glasgow, the county seat. Excellent wells were brought in at a depth of 520 to 560 feet, producing high grade oil for which purchasers pay the Somerset light price.

The shallow depth and relatively high price for the product encouraged drilling when there was little doing in adjoining counties. As a result the pool has been broadened and others in that vicinity have been opened.

Older wells in Barren County were drilled to a pay found 30 to 50 feet below the Devonian shale, but in the Emery-Moore Pool the pay was found at 185 to 200 feet below the shale. Many old wells have been deepened to the new sand with good results. A late completion of interest is the Consolidated Gas Co.'s well on the Hall Baker farm, 1¼ miles north of Glasgow. This is in new territory and as several other good producers have been brought in adjoining the Baker it looks as though a new pool is being developed. At present there is more drilling under way in Barren County than in any other in the entire State.

The oil runs from Barren County showed a steady increase through the year, starting at 4,700 bbls. in January and reaching a peak in September of nearly 12,000 bbls., a total increase for the year of approximately 32,000 bbls.

Cumberland County

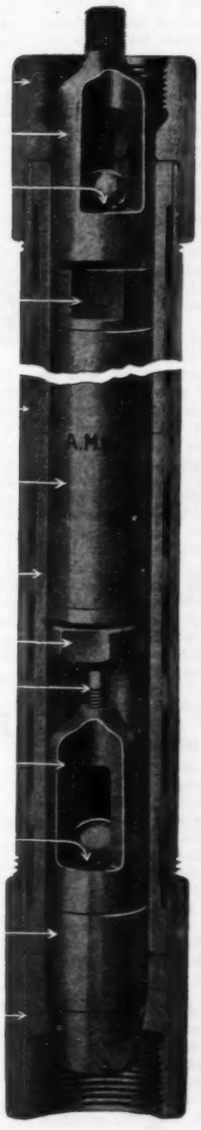
Cumberland County started off with bright prospects, the Paragon Development Co. had completed its pipe line through the county and was taking oil. A number of wells with unusually large flush production were completed. However, it is an expensive section in which to operate, due to its isolation and with cuts in the price of crude and the announcement by the Paragon that it would prorate, oil operations fell off until the close of the year found but eight wells drilling in the county.

The outstanding feature of the year was the discovery of a deeper pay at Kettle Creek. A. S. McClintock carried No. 6 Bud Kerr through the usual sands and on to a depth of 30 feet below the Pencil Cave, where an entirely new producing horizon was found. The well came in making 80 bbls. No. 1 Bud Kerr, the discovery well of the field was redrilled to this new pay where it made 1,500 bbls. on a 24-hour test. It has since been drilled to 150 feet below the cave where it is a small pumper. Other operators in this district drilled to the new pay with success.

At Galloway Creek a well came in making 100 bbls. at 105 feet, just below the Pencil Cave. It soon exhausted itself, was drilled deeper and is still producing. It is several miles from production on Judie Creek.

The Sulphur Creek Pool was extended to the north by completions on the Mrs. Coop and Huddleston-Payne leases, starting off at from 100 to 400 bbls. flush at depths ranging from 590 to 650 feet. The Bear Creek district was extended half a mile to the south when E. M. Treat & Co.'s No. 1 Dickens came in for 222 bbls. at 468 feet in a stray sand, 133 feet below the black shale. It is reported that two wells on the Dickens farm have produced $26,000 worth of oil since their completion, the early part of last year.

Three-quarters of a mile south of the Kettle Creek area, the Young Oil Co. got a producer 20 feet below the Pencil Cave making 250 bbls. initial production. Thirty-seven wildcats drilled in Cumber-



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land County in attempts to extend oil production or open new pools were failures.

During the first three months of 1924, Cumberland and Monroe Counties produced more oil than during the entire year of 1923. The total production for 1924 was in the neighborhood of 116,000 bbls. while in 1924 it was 26,000 bbls.

Nothing of importance happened in Simpson County during the year. Just below the Warren County line there are several producing leases. On the Summers, E. M. Treat & Co. completed two wells good for 100 and 150 bbls. initial production in the shallow sand. Aside from these, several small wells are reported.

Prospects for 1925

There is a feeling among most of the veteran operators in this field that better conditions may be looked for during the year 1925. This felling is based on their belief that crude prices will not be advanced so rapidly as to cause an exceptionally large drilling campaign in the big fields of the country. With normal conditions and a fair price for crude a lot of drilling will be done in this area, as there are thousands of proven locations as yet untouched, owing to disinclination of the producer to put flush output on a low market.

The bringing in of several new districts in the western division of Kentucky has aroused interest as well as extensions to already proven pools. The new deep sand production that has recently been found in the Rodemer district in Allen County; the opening of the Gorby Pool, southwest of the Emery-Moore Pool, and the Hall Baker Pool, a mile north of Glasgow in Barren County and the bringing in of a wildcat south of the Herbert school house district in the Owensboro Field will result in a large amount of new work. Pipe line connections have been made to all these districts and the producer will be assured of a ready market for his crude.

There will be little wildcatting done in any part of this field as producers in most cases will confine their attention to already proven territory and try to build up their production which has fallen off considerably the past year.

Eastern Division

The opening of a new producing area in the extreme southeastern end of Owsley County; the extension of the Idamay Pool of Lee and Owsley Counties; the extension of the Union Gas & Oil Co.'s Weir sand field in Lawrence and Johnson Counties; the discovery of oil in the Weir sand as far west as Lakeville in Magoffin County and the drilling in of the Roberts well of the Atlantic Oil Producing Co. in Wolfe County, were the high lights of the year just passed in the eastern portion of the Blue Grass State.

During the first half of the year several tests were started in non-producing counties most of which are still in course of drilling. These wildcats hold the attention of the oil companies throughout the year and a vast amount of acreage was leased in many different counties. The most important test finished was the Henry Oil Co.'s No. 1 Daniels-Foreman good for 20 bbls. at a total depth of 1,118 feet where it showed 11 feet of Maxon sand. It is 18 miles from the nearest production at Idamay on Upper Buffalo Creek waters of the South Fork of the Kentucky River, in the long neck of Owsley County, where Breathitt, Perry, Owsley and Clay Counties join. In Clay County two wildcat tests were dry. Dulin's No. 1 Gabbard at 1,600 feet and the Petroleum Exploration's No. 1 Newbary-Robinson approximately 1,750 feet deep.

Lee-Owsley Counties

The Petroleum Exploration Co.'s No. 1 George Botner was the most important completion in the Idamay Field of Lee and Owsley Counties. It is 1½ miles south of production and as it came in making much larger flush production than wells in the Idamay Pool proper it caused much new drilling. The Botner well was drilled to 1,303 feet, 30 feet in the sand started off at a 240-bbl. gait and held its initial output for some little time. Other wells on this lease, the Smith, Adaline and James Porter farms, Dave Mays, Gourley-Redman-McGuire, and others in this southern extension, proved excellent producers. In the eastern extension of this pool, Ben Flemming and others made a 200-bbl. strike in the Elmer Evans which proved at least eight new locations eastward.

North Weir Field

One of the outstanding events in the producing way was the extension of the North Weir Field of Lawrence and Johnson Counties approximately 2 miles north and a little west of the hamlet of Martha, where the Union Gas & Oil Co. brought in No. 1 C. K. Dobyne for a flush around 100 bbls. It is located on a block of about 17,000 acres which has heretofore been looked upon as out of line for production. This well was drilled something like three months ago and since then more than a dozen new completions have been made that average from 20 bbls. up per well. At this time there are no dry holes between the north extension and the Union or Ayersville area and there is little doubt that the intervening territory will prove as productive as anything yet drilled in the Weir sand field. The Union Gas & Oil Co. and Garrison & Townsend appear to have the call on the best production in the new extension.

It is in the North Weir Field that the Union Gas & Oil Co. made its wonderful record. This company up to the close of 1924 completed a total of 581 wells in the field, of which 504 proved commercial oil producers, 8 were dry holes and 69 were gas wells. This concern opened up this area some seven years ago, and would have done a larger amount of development work during the year just closed had the price of crude been more satisfactory. It was on May 7 that the 500th well was brought in on the J. H. Sparks for a flush of 100 bbls.

In the South Weir Field of Johnson and Magoffin Counties, the wells are not as large, but are well worth the expenditure and the field is due for an extensive development in the near future. The discovery of oil in the Weir sand as far west as Lakeville, in Magoffin County, adds a large undeveloped area of territory to the older producing section of the county of Magoffin. The Berea Field to the east of the Weir Field in Johnson County had but a small amount of drilling and the wells were very light compared to those in the Weir sand section.

The completion of the Atlantic Oil Producing Co.'s 100-bbl. flush well on the James Roberts farm in Wolfe County, brings about another interesting spot for the trade to work on. This well is 2 miles south of the old Campton Pool and in a sand from 1,200 to 1,300 feet.

The Weir sand as things look at this time may extend north as far as the Ohio River. Approximately 6 miles west of the North Weir Field in Morgan County, Wheeler and others drilled an 8-bbl. well a mile above Elk Fork, which may mean a further extension to the west.

An important extension of the Isenville Pool in Elliott County was made in October by Hupp, Duff & Co.'s No. 1 on the V. O. Davis farm, one mile from Burke postoffice on Rocky Branch. It was reported at 15 bbls. from the Weir sand at 875 feet and extended production 3 miles to the north.

Wildcat Work

The past two months has seen the starting of several important wildcats. The one attracting the most attention is that of the Eastern Gulf Oil Co. on the G. M. Ballard 400-acre tract in Jackson County near the Rockcastle County line. It is reported that a large leasing campaign is going on in the vicinity of this test and should it prove productive will mean that extensive drilling will be done in that territory during 1925.

The test of the Petroleum Exploration on the Flint farm in the Lakeville locality of Magoffin County struck a showing of oil in the Weir sand and is important as it serves to prove that the Weir extends over a much larger portion than at first thought. In the same county, near the Knott County line, the Petroleum Exploration is starting a test on the J. J. Howard at the head of Licking Creek that is being closely watched.

In Clay County a test recently started by the Standard Oil Co. of Kentucky showed 2,000,000 feet of gas at a reported depth of 1,600 feet and will no doubt renew interest in that county. This is the first well ever drilled by the above company.

It is freely predicted by operators that 1925 will be one of the most active periods in the eastern district as the larger companies are taking acreage in all sections of the field and are mapping untested territory. The general belief is that the crude market will go upward early in the New Year and plans are now being made by producers to drill proven locations as well as to do extensive wildcatting.

Other Southern States

Exploration in the tier of counties around Tennessee, namely Mississippi, Alabama and Georgia continues unabated despite the fact that nothing of any great importance has been struck outside of the Tennessee end. Various showings that were uncovered from time to time in other States listed above have been sufficient to keep the tests plugging along. Those who are backing their faith with a large outlay of cash think that the possibilities are good for opening something of consequence. The year just passed has been an important one from a wildcat standpoint and there will be no let up during the present one to develop new territory.

In Mississippi the mapping of a number of interesting structures has kept this area to the fore when compared with other southern States. At the present time there are 26 rigs in this area of which 7 are active, the others being idle for various reasons. During the year just passed six wells were finished and all proved worthless. The largest number were recorded in Pike County, with three, while there were one each in Chickasaw, Tishomingo and Tallahatchie. A number of the major companies have established a scouting system throughout this area and they are keeping close tab on the operations.

The past year in Tennessee showed 28 completions, of which 9 were listed as failures. The remaining wells showed a new production of 1,199 bbls. The most active county was Clay, adjoining the Cumberland and Monroe County Pools in Kentucky, where 19 wells were finished of which 8 showed a production of 1,149 bbls. The only other county in the State to show production was one completion in Morgan with a 50-bbl. output. This was a wildcat and will cause some interesting development during the present year. The largest completion of the year in review was recorded in Tinsley's Bottom, in Clay County, with an initial production of better than 1,000 bbls. at a total of 429 feet, on top of the Modoc sand. Heretofore the sand had produced but meager wells, and this new well caused considerable excitement and will be an incentive for renewed operations during 1925.

Outside of the gas developed near Sheffield in Alabama a number of years ago nothing of any importance has been uncovered, although there are some who still think the petroleum possibilities are good. There are 10 wells drilling or shut down for various reasons at the close of the year 1924. The only showing reported during the year was one-half mile southwest of Decatur, in Morgan County. The test is shut down at present at 3,400 feet, the gas showing being uncovered at 3,128 feet. The well is known as the Albany-Decatur Oil Co.'s No. 1 J. English in Section 6-6-4. During the year the only completion reported was a dry hole in Colbert County, being drilled to a depth of 890 feet. It was 15 miles south of Sheffield.

In Georgia no completions were reported and the five tests in the State are all idle at this time. The deepest one is in Jeff Davis County, near Hazelhurst and is shut down at 1,975 feet.

Following will be found the recapitulation of work of 1924 in Kentucky, Ten-

(Continued on Page 273)

EXPORTS OF OIL WELL EQUIPMENT SHOWED LARGE INCREASE PAST YEAR

By N. O. Fanning

NEW YORK, Jan. 26.—Exports of oil well equipment and line pipe during 1924 showed a large increase over 1923. Figures for the first 10 months are available for the United States. The movement from New York during the last two months, November and December, increased subsantially, and was at its height at the close of the year. Furthermore, it is known that several large operators abroad have purchased several million dollars worth of equipment at New York during the last four weeks, which will be shipped over a period of the next few months.

Much of the equipment exported from New York during the last two months has been consigned to Australia, and is believed to be for the account of the Anglo-Persian Oil Co. Equipment has also gone to Venezuela, Peru, Russia and the Dutch East Indies.

The Bureau of Foreign and Domestic Commerce reports the following exports of oil well pipe and machinery during the first 10 months of 1924 and 1923:

BULK OIL HANDLED THROUGH TEXAS CITY, TEX., DECEMBER, 1924

Company—	Refined	Crude	Total
Humble Oil & Refining Co.	None	1,638,506.83	1,638,506.83
Marland Refining Co.	55,641	332,655.00	388,296.00
Swiftsure Petroleum Co.	None	284,217.33	284,217.33
Vacuum Oil Co.	None	226,906.18	226,906.18
Total	55,641	2,482,285.34	2,537,926.34

Exports from Texas City

Company—	Refined	Crude	Total
Humble Oil & Refining Co.	None	None	None
Marland Refining Co.	55,641	144,593	200,234
Swiftsure Petroleum Co.	None	None	None
Vacuum Oil Co.	None	None	None
Total	55,641	144,593	200,234

The quantity of material shipped abroad during the 1924 period was approximately 50 per cent larger than in the corresponding period of 1923. The value increased about 30 per cent.

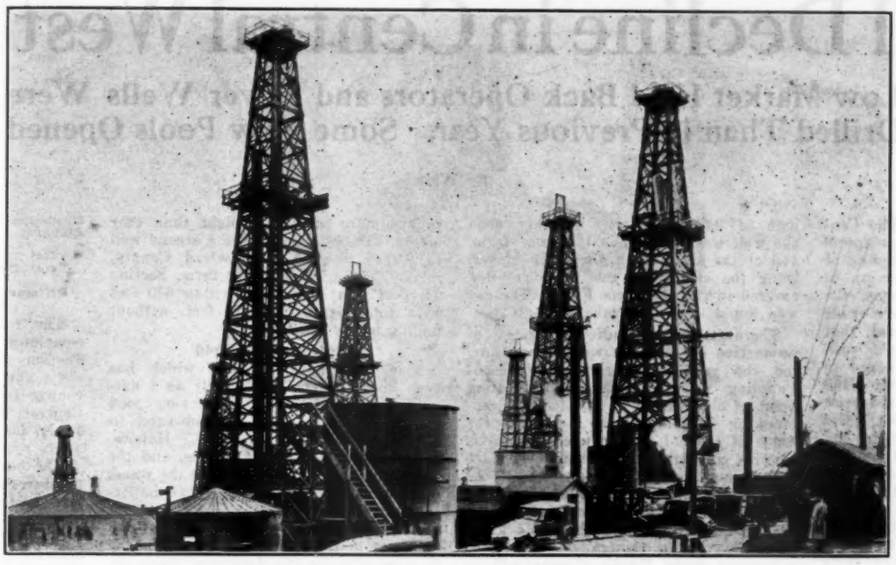
The largest increase was recorded in the item "line pipe and casing." This is also the largest item in weight and value among the equipment exported. However, the gain in amount of oil well drilling apparatus was almost 100 per cent, and the value increased more than 100 per cent.

To judge from the official records and the movement from New York now in progress, 1925 will be the record year in oil development abroad. As there is so much good oil land abroad yet undeveloped it is almost certain that with a record amount of development, crude oil production will be largely increased.

Anglo-Persian Oil Co. is said to be able to increase its output 100 per cent this year over 1924 if it desires to put in the necessary pipe line facilities. The Dutch-Shell combine and Standard Oil Co. of New Jersey have both recently purchased considerable material for the Dutch East Indies. It is understood the latter company will make its first attempt to develop its concession on the island of Sumatra.

Much oil well drilling equipment has been purchased in the United States by Russian interests.

Equipment exported for American companies has gone largely to South America. Countries included are Argentina, Venezuela, Colombia, Ecuador, Peru, Chile and Bolivia.



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General Decline in Central West in 1924

Low Market Held Back Operators and Fewer Wells Were Drilled Than in Previous Year. Some New Pools Opened

By Whit

FINDLAY, Ohio, Jan. 26.—The Central West Field, with its bright prospects for development work, at the opening of the year of 1924 failed to come up to expectations for numerous reasons, the main one being the lowering of the crude oil market price to such an extent, that the operator realized the season's work would have to be carefully managed to show a return for the expenditure. Had it not been for the lowering in the price of drilling and the fact that most leases on which work was done already had pumping power plants installed to take care of that end of the expense operators would have had a more difficult time in trying to come out with a profit. During the early part of the year operators were up against a hard proposition as excessive rains prevailed through the early spring months, making it almost impossible to move heavy materials from the macadamized highways to lease locations. In fields where hard roads were practically unknown, nothing could be done worth while. Due to these conditions the entire year only showed a total of 3,167 completed wells over the entire Central West Field, including the Lima Field of northwestern Ohio, Central Ohio, Indiana, Illinois, Michigan, Kentucky, Tennessee, Mississippi, Alabama and Georgia, or 620 wells less than in 1923, with more than 12,000 bbls. less new production, 233 fewer dry holes, 78 fewer gas wells, while there were 67 more wells abandoned after years of producing.

Neophytes Make Good

In the old Lima Field some interesting developments were made during the year. One that attracted most attention early in the season was the drilling in of a purely wildcat well by men new in the oil business. This test was made by the Eilerman Brothers, on the Eilerman farm, in Cynthian Township, Shelby County and south of the old field. The test was drilled with an old string of tools gathered up from here and there and the brothers, unaccustomed to handling drilling tools, did the drilling successfully. The trade awoke one morning early in January and discovered that a new producing area had been opened near the small town of Newport and there was a rush for the new area. The well came in for a production of 8 bbls. a day natural, and while not large, it started a lively leasing campaign. In April Harmon, Miller and others of Mansfield, made the new area look more inviting when they brought in a well on the Charley Broeman farm, that was reported with a flush around 100 bbls. The Eilermans have drilled three wells on the Eilerman farm, and the latter two, after they were given shots were excellent producers and Harmon, Miller and others also drilled three additional producing wells. More operations would have resulted but the downward trend in the price of crude, prohibited further development in the area.

Mercer County Came Through

During January natural gas was discovered in Butler Township, Mercer County, Ohio, as well as a showing of oil, but when the test was made by O. J. McGuigan and others on the Joseph Winning farm, a flush production of 65 bbls. resulted and from then until the close of the year, more or less operating was done in that part of Mercer County. The sensational find in that county was when Defenbaugh and others struck a gas well on the E. Snyder form, in Section 16, Butler Township, that showed a volume of 4,000,000 feet at the shallow depth of 574 feet. This well was completed in November as well as the No. 2, which at the same depth showed a volume of 3,500,000 feet. Another good gas well was finished on the same farm, and at the same depth during December, being the shallowest gas wells yet discovered in the old Lima Field. The gas was found in the Niagara Lime.

There have been quite a number of productive oil and gas wells found during the year in the Payne Field of Paulding County, but the interesting point of observation at this time, is centered in Hardin County, also to the south of the old field, where some wells running as high as 90 bbls. flush have been found in the Trenton at depths varying around 1,440 feet, and with remarkable staying production, in fact the best in the field outside of the old Tiffin Field, in Seneca County. With better prices for crude, Hardin County will be given a heavy play this year as every available acre has been leased up.

Best Well in 20 Years

The largest producer found in the Lima Field for the year, in fact for the last 20 years, was drilled in April by the Zorn-Hornung Oil Co. Gibsonburg, on the Mary Schott farm, in the Elmore Field, in Harris Township, Ottawa County, with a production of 1,050 bbls. and caused quite an excitement, but since then all completions in the field have been of the ordinary size, the big well having struck a crevice in the Trenton. It has gone down to a normal producer. Since then production has been found to the north and northwest on the north side of the Portage River from the gusher. The next best fined in the Trenton was made by the Sun Co., on the S. A. Barhoff farm, in No. 3, in Eden Township, Seneca County, near Tiffin, in March, with an initial production of 400 bbls. which also proved to be a crevice well deep in the Trenton.

In July and August, the Aetna Oil Co. drilled a 75-bbl. well on the Thomas Lamb, in Harrison Township, Paulding County, and the W. C. H. Oil Co., one of the same size on the Yearling farm, Benton Township, same county. In Wyandot County, Riley and Allen and others found a 50-bbl. initial production in a well in Wyandot County, the first well of note for that county in more than 20 years. In the early days that county was a heavy producer from a large number of wells, but the wells gave out quickly. In Wood County, the Ohio Oil Co. hit a 100-bbl. deep-sand Trenton Rock well on the Sol Smith farm in Bloom Township. H. A. Bower drilled a test on his lot, in the corporate limits of Findlay, in Liberty Township, Hancock County, that showed a flush of 40 bbls., something out of the ordinary for the old producing area.

In September the Sun Co. made an attempt to find production to the southeast of the old Trenton Rock Field, in that formation and went to a total depth of 2,414 feet, or 530 feet into the Trenton, at a test on the Wooster Reidle farm, Section 11, Texas Township, Crawford County, and got a showing of oil.

An Important Pool

An important pool was opened in October when E. E. White brought in a 100-bbl. well on the G. R. Julian farm, in Moulton Township, Auglaize County, a short distance west of Wapakonetta. In the same month, Robinson & Mandell struck a gas well on the William Wood farm, Benton Township, Paulding County, with a volume of 1,900,000 feet, the gas being used for fuel in drilling wells.

In December, Whipple, Ulrich and others drilled in a 90-bbl. well in No. 2 A. R. Zimmerman farm, McDonel Township, Hardin County, bringing that county more in the limelight than ever before. The Sun Co. drilled a second well in Texas Township, Crawford County, in No. 1 Charles M. Oder farm, Section 11, that went into the Trenton 649 feet to a total depth of 2,423 feet, without finding a pay streak.

Central Ohio Field

The Central Ohio Field, which has been known almost exclusively as a natural gas field developed some very good oil wells in the deep Clinton sand in Licking, Fairfield, Hocking, Holmes, Wayne and Coshocton Counties, and the fact that the gas pressure is on the wane, may mean in the near future an important oil area.

The main strike and one of most importance in the Indiana Field was made in September by the American Engineering Co., on the C. C. Harris farm, northwest of Balbec, in Penn Township, Jay County, and southeast of the one-time famous Harris Pool. The Harris well had a flush of 100 bbls., and is spot that will be given a good play when conditions warrant it. In November the second well on the Harris lease had a flush of 50 bbls. In the same month George D. Roberts struck a 75-bbl. well in No. 5 Cline, in Liberty Township, Delaware County. In Gibson County, Union Township, a wildcat drilled by J. H. Young and others on the Thomas Compton farm, produced 20 bbls., opening up an entirely new area for work. In December D. L. Thompson drilled a test on the John Kelley farm, in Wabash Township, Adams County, showing 30 bbls., and represents a new area in which to start work on the coming spring.

Results in Illinois

Illinois had its ups and downs during the past year, but Wabash County came to the rescue and showed some excellent flush wells. In May the Arkansas Fuel Oil Co. and others secured a large block of leases in connection with Hartman, Parrott and Young in Wabash and Friendsville Townships, Wabash County, and in May brought in No. 5 on the Della Wright farm, upon which the initial well of the Wright Pool was drilled for 140 bbls. Mack Leighty and others' No. 1 Holson-Dorney farm, showed 120 bbls., and Timebrlake and others' No. 2 J. T. Smith, 110 bbls. In July, the Arkansas Fuel Oil Co. and others completed No. 7 Della Wright for 120 bbls.; in August, No. 8, same farm, showed 140 bbls., while the Adams Corner Oil Co.'s No. 4 J. T. Smith, showed 130 bbls. In the same township, during September, the Arkansas Fuel Oil Co. and others' No. 1 Earl Leighty farm, produced 175 bbls.; Coon Creek Oil Co.'s No. 2 Alice R. Biehl farm, 150 bbls., and Edmondson and others' No. 2 Price heirs, 150 bbls. In October, the Coon Creek Oil Co.'s No. 3 Biehl farm showed 180 bbls., and Whiteside and others' No. 1 H. W. Winter farm 200 bbls. In November, the last named firm struck a 390-bbl. well in No. 1 C. E. Courter farm, Section 24, Wabash Township, Wabash County.

Twelve Months' Work

During the year 1924, 3,167 wells were completed in the Central West Field, of which 2,054 were oil wells, with an initial production of 47,060 bbls.; 705 dry holes and 408 gas wells. There were 856 old wells abandoned. These wells were distributed among the various fields as follows:

Field—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
Lima	592	9,745	63	42	621
Central Ohio	605	1,993	147	285	0
Indiana	150	3,445	46	11	178
Illinois	179	5,079	55	2	57
Kentucky	1,605	25,599	368	61	0
Tennessee	28	1,199	19	6	0
Mississippi	7	0	6	1	0
Alabama	1	0	1	0	0
Total 1924	3,167	47,060	705	408	856
Total 1923	3,787	59,609	938	486	789
Difference	620	12,549	233	78	67

Distribution of Wells

The following tables give the wells completed monthly, amount of new production, dry holes, gas wells, abandoned wells and the number in each field and county in the northern division of the Central West Field, north of the Ohio River, for the period as follows:

Lima Field in 1924

The completions in the Lima Field of northwestern Ohio during the year 1924 were recorded each month as follows:

Month—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
January	31	641	4	2	39
February	27	252	4	4	12
March	36	839	4	7	34
April	38	1,658	6	2	42
May	59	577	10	2	54
June	63	1,070	6	1	35
July	65	1,030	3	6	31
August	68	1,040	4	1	33
September	46	658	4	1	10
October	62	737	6	5	84
November	51	595	6	5	74
December	46	648	6	6	161
Total 1924	592	9,745	63	43	621
Total 1923	697	13,151	75	17	678
Difference	105	3,406	12	25	45

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
Wood	139	1,679	16	1	191
Hancock	59	1,170	2	6	13
Allen	37	439	3	1	100
Auglaize	35	656	3	0	22
Sandusky	12	90	0	0	100
Mercer	104	989	12	6	14
Van Wert	19	366	1	1	29
Seneca	9	475	6	0	1
Lucas	4	0	1	3	41
Ottawa	61	1,645	3	0	6
Darke	27	346	5	0	0
Hardin	25	320	2	13	4
Shelby	27	379	5	17	0
Paulding	31	941	2	4	0
Wyandotte	1	50	0	0	0
Crawford	2	0	2	0	0
Total	592	9,745	63	42	621

Central Ohio

Completions in the Central Ohio fields for the year 1924 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	50	42	17	11
February	51	152	18	29
March	56	90	16	38
April	42	242	9	26
May	59	258	15	33
June	24	91	0	19
July	37	170	6	32
August	60	214	14	30
September	55	151	16	31
October	56	110	14	28
November	74	318	14	49
December	53	154	8	38
Total	605	1,993	147	385
Total 1923	642	1,657	193	365
Difference	37	336	46	20

The above wells were distributed among the various counties of Central Ohio as follows:

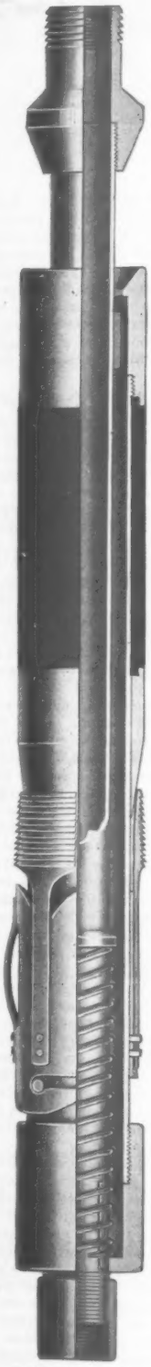
County—	Comp.	Prod.	Dry	Gas
Licking	2	0	1	1
Fairfield	1	0	0	1
Knox	25	23	5	14
Ashland	50	0	10	46
Medina	62	12	29	31
Lorain	19	0	4	15
Wayne	136	872	29	73
Richland	73	0	14	59
Vinton	1	0	0	1
Hocking	19	140	6	8
Holmes	77	895	15	42
Coshocton	7	45	1	3
Jackson	28	0	4	24
Athens	80	6	19	60
Meigs	6	7	1	4
Huron	4	0	3	1
Cuyahoga	8	0	0	8
Summit	7	0	4	3
Total	605	1,993	147	385

Indiana

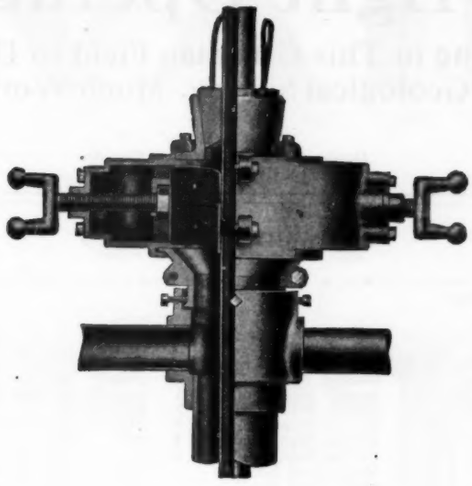
Indiana's completions for the year 1924 were distributed by months as follows:

Month—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
January	18	559	6	1	11
February	5	320	1	0	41
March	12	442	4	0	7
April	7	515	1	4	20
May	31	423	7	1	9
June	12	145	6	1	5
July	13	122	2	0	14

(Continued on Page 271)



Valve Open, Allowing passage-way between Packer and Tubing



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BETTER BE SAFE THAN SORRY

Irma-Wainwright Operations in 1924

Results of Drilling in This Canadian Field to Date Reported by the Dominion's Geological Survey. Much Work Accomplished

By G. S. Hume
Geological Survey, Ottawa, Canada.

The result of by far the greatest significance in the Irma-Wainwright oil and gas area of Alberta, Canada, during 1924 was the bringing in of British Petroleums Letd.'s No. 4 well. After drilling through the cement plug which cemented in the 8-inch casing and cut off "top" waters, the well was bailed for about 12 hours, when oil began to come in quantity. The oil rose steadily and rather rapidly for such heavy oil in the 8-inch casing to within about 50 feet of the top of the well, thus giving slightly less than 2,000 feet of oil in the well. A 2-inch flow line was then placed in the well and the 8-inch casing was closed at the top. The pressure rose to over 300 pounds and oil accompanied by gas flowed in a continuous stream through the flow line into a large pit that had been excavated. No estimate of the amount of oil this well will produce can be made until it is tested by the pump which British Petroleums has now secured. At the writer's last visit to this well on October 14 it was still flowing but the flow had decreased considerably from the initial flow. To get the maximum results it will be necessary to pump the well and a test is expected very shortly when the real capacity will become known. The oil from this well is from the same sand as was found to produce oil in No. 2 well and is consequently much the same in quality but contains much less water when it comes from the well than that from No. 2, as shown by the analyses published by Mr. Kelso, of the Industrial laboratories, University of Alberta. The Mines Branch, Department of Mines, is now conducting tests on this oil and the results will be dealt with in detail in the Summary Report of the Geological Survey.

The Maple Leaf No. 1 well found considerable gas at several horizons but the main flow was struck at 1,705 to 1,720 feet. Drilling was continued to some depth below this gas, when a sand that gave an oil test was found. The casing was cemented above the 1,705-foot gas horizon and on drilling through the cement plug gas came with sufficient force to blow the heavy mud fluid used in rotary drilling out of the hole. It is quite evident that the hole is now free of mud fluid above the 1,705 gas sand, but it is thought that below this level the thick mud still fills the hole and effectively seals in the oil sand below. The closed pressure on this well on October 14, the time of the writer's last visit, was 700 pounds, and the amount of gas measured at some time previous to this was 2,500,000 feet. It is understood to be the intention of the Maple Leaf Co. to put tubing into the well and lower it below the 1,705-foot gas sand. The lower part of the well can then be cleared of mud fluid and the possibilities of the oil sand can be tested.

No results from other wells drilling in this field are yet available and most of the wells are not at a sufficient depth to reach the oil or gas horizons.

Work of Geological Survey

During the summer of 1924 the writer, with the assistance of R. H. Pegrum of the University of Alberta, undertook a regional study of an area from the North Saskatchewan River to the Grand Trunk Pacific Railway and from Viking east to the Saskatchewan-Alberta boundary. To become as familiar as possible with the stratigraphy in the minimum amount of time a traverse was first made from Edmonton along the North Saskatchewan River to the eastern limits of the area to be studied, using notes and map prepared by Dr. J. A. Allan of the University of Alberta in 1917 for the Geological Survey.

After this traverse had been completed as many outcrops as could be found in the area outlined above were studied and mapped and detailed levelling by a special party consisting of A. J. Childerhose and W. Yarwood was started with the object of accurately outlining the structure. The result of this study led to the finding of several folds of which the known details will be published in the Summary Report. One of the important discoveries regarding this folding is the fact that the British Petroleums' wells Nos. 1, 2 and 4 are on an unsymmetrical anticline, and due to this discovery well No. 5 was located by Mr. Emmens, superintendent of British Petroleums and Mr. Lamb, assistant superintendent, on this favorable structure.

Detailed Levelling and Structure

The value of detailed levelling in working out structures in this area cannot be overstressed. The levelling party under the writer's direction, ran a line of accurate levels from the precise level mark of the Geodetic Survey on the Grand Trunk Pacific Battle River bridge down Battle River Valley to Buffalo coulee and thence northwest up Buffalo coulee, tying in to a bench mark of the Topographical Survey Branch, Department of the Interior. The outcrops along this distance had been previously studied and mapped and levels were run by plane table from the line of accurate levels to each outcrop where the position in the geological section was known. Consequently the levels furnished accurate information respecting the position of the outcrops.

It was at once evident that Buffalo coulee corresponds rather closely with the strike of the formation and that there is a fold or anticline at the turn of Battle River at Section 36, Range, 7, and Section 31, Range 6. This anticline apparently crosses Battle River. Detailed work on it was then undertaken by V. C. Lamb, assistant superintendent of British Petroleums and the writer, Mr. Lamb using a transit for levelling and the writer taking the responsibility to see that the correct horizons were levelled. The horizon used in this particular case was some hard beds of sandstone belonging to the Birch Lake formation. As this is a non-marine formation, these hard beds of sandstones possibly do not retain the same stratigraphic position over long distances, but over a limited distance it is thought they can be used successfully. At any rate they are the only horizons that can possibly be used in this area as they form the majority of the outcrops and the accuracy of interpretation of the structure will thus depend on the interpretation and correlation of these beds.

The result of the work at the British Petroleums location showed that west of Nos. 1, 2 and 4 wells there is a gentle southwest dip, while to the east there is a steeper northeast dip. The crest of the anticline is very nearly flat for a considerable distance and the amount of dip from the crest eastward to the lowest point found on the syncline or down-warp is 40 feet in about half a mile. When it is realized that the steeper northeast dip of this unsymmetrical anticline is less than 1 degree while the southwest dip is still more gentle, the value of the accurate levelling is at once obvious. In fact it is believed that no reliable information can be obtained unless very accurate levelling is undertaken in conjunction with intensive study of the stratigraphic succession. The results at British Petroleums from wells drilled on this anticline show that in this field as in most others the oil is to be found only in connection with some type of anticlinal structure and consequently wells located without any regard to structure are liable to have little success in obtaining oil.

Local and Regional Structure

The regional structure of Alberta has been described in Memoir 116 of the Geological Survey as follows: "The beds underlying the plains have, broadly, the form of a very large basin, that is a bed which outcrops along the edge of the plateau to the east and is also in the foothills to the west, will be found at various depths beneath the surface between these points." East of this major syncline the dip becomes more gentle and the structure of the central plains has been described as a low monocline with evidence of terrace structure on the west. It is with this so-called terrace structure that the Irma-Fabyan-Wainwright area is connected. The dip over this area is gentle and although the regional dip would be considered to be in a southwest direction there are a number of departures from this rule where the dip is in the opposite direction, thus giving small folds with one of which the oil in Nos. 2 and 4, British Petroleums' wells is evidently associated. The western edge of this terrace is supposed to extend from Misty Hills south of Monitor on the south to the west of the Viking gas field on the north.

It is believed there are other folds east of the fold at the British Petroleums' wells but detailed levelling has not yet been attempted on these folds. Such data as the writer has on these possible folds is therefore only of a general nature, but will be presented in the Summary Report. It would seem most advisable before well locations are made with a view to testing out these structures for oil, to have as thorough a study as possible made of the surface conditions so that such wells could be located in the most favorable places.

Structure at British Petroleums' Wells

As has been stated detailed leveling showed a gentle southwest dip of only a few feet to the mile to the west of British Petroleums' Nos. 1, 2 and 4 wells and a more pronounced northeast dip east of the same wells, the maximum dip northeast being about 40 feet in half a mile. The No. 5 British Petroleums' well is located on this structure. If the oil sands that are yielding oil in Nos. 2 and 4 wells are continuous and of the same character under the No. 5 location there is every reason to hope that this well will also contain oil. From the small amount of information available it appears that the strike of this fold at Nos. 1, 2 4 and 5 wells is east 30 degrees south, to east 45 degrees south. On Ribstone Creek to the southeast on the strike as outlined above no exposures were found.

The outcrops farther east at Edgerton belong to the Ribstone Creek formation but are such they could not be exactly placed in the stratigraphic succession. The horizon indicated is lower stratigraphically than the Birch Lake sandstones which outcrop on the banks of Battle River in Section 36, Range 7 and Section 31, Range 6. The amount of stratigraphic difference is important since it could be used as a measure of the amount of plunging, if any, of the anticline to the northwest. From present data however, it appears that the difference is so small that the amount of plunge is insignificant. Owing to the scarcity of outcrops on Ribstone Creek on the strike of the British Petroleums' anticline no structure could be determined, so it is not known how far the British Petroleums' anticline extends southeast.

No. 3 British Petroleums' well, Western Consolidated, and British Wainwright locations are on the strike of the anticline known to be present at British Petroleums' Nos. 1, 2, 4 and 5 wells; but whether the anticline extends sufficiently far southeast to include all these locations cannot be definitely determined from present data available. It is indeed unfortunate there are so few outcrops in the area southeast of Battle River in the vicinity of these wells because, other than the logs of the wells themselves, there is little on which to base conclusions regarding structure. An outcrop of Birch Lake sandstone occurs on Baxter Lake, south of the bridge over the narrows of the lake in Section 30, Range 5, but the elevation of this one outcrop is inconclusive from the standpoint of structure.

The British Petroleums' management has been most generous in giving information regarding its well logs to the writer; but it can easily be understood that one point or a series of points in line along the strike of an anticline, known only for sure to exist farther northwest, give little data regarding the structure in a northeast and southwest direction or at right angles to the strike. In fairness it should be stated that an examination of the logs of the British Petroleums' No. 3 well and of Western Consolidated well allow the interpreta-

(Continued on Page 261)

SUMMARY OF PROGRESS

The results of drilling in the Wainwright-Irma area up to the present are as follows:

Well location R. T. S.	Elevation	Company.	Date drilled	Results
7-45-18	2,040	Imperial (Fabyan) No. 1	1921-2-3	Gas and oil.
8-45-14	1,969.4	Imperial No. 2	1923	None.
8-45- 4	1,942.3	Gratton No. 1	1914-5	Gas
7-45-36	2,187.1	British Petroleum's No. 1	1922-3	Gas and oil show'gs
6-45-30	2,251.3	British Petroleum's No. 2	1923	Oil.
6-46-31	2,304.3	British Petroleum's No. 3	1924	Not complete.
6-45-30	2,251.9	British Petroleum's No. 4	1924	Oil.
6-45-29	2,320.3	British Petroleum's No. 5	....	Derrick erected.
8-45-19	1,991.9	Maple Leaf No. 1	1924	Gas with oil show.
8-45-19	1,937.3	Maple Leaf No. 2	....	Derrick erected.
6-45-26	2,270.1	Western Consolidated	1924	Drilling.
7-44-36	2,216.8	Wainwright Prod. Synd.	1924	Drilling.
6-45-22		British Wainwright	....	Derrick erected.
9-45-28	2,252.1	Irma Oil Holdings	....	Drilling.

W. of town of Irma.

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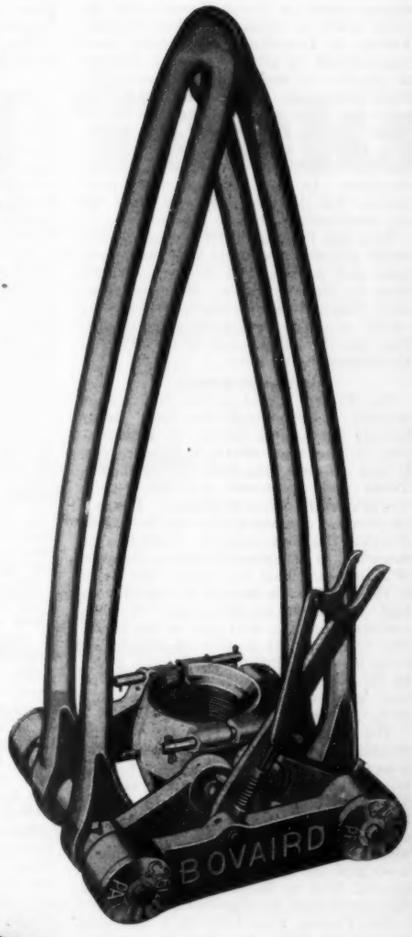

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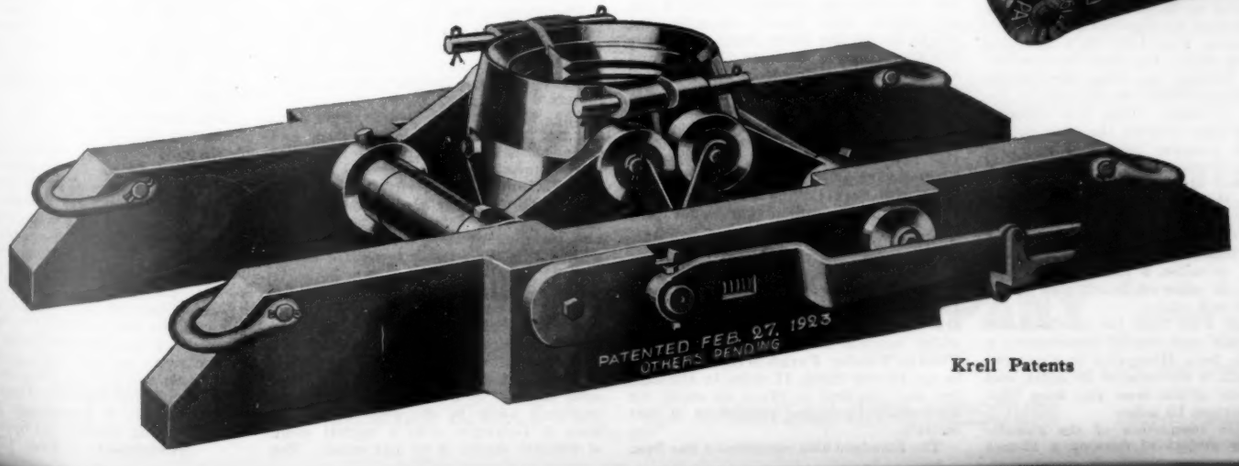

Krell Patents

Pipe Line Building Fell Off in 1924

Big Program Carried Out in 1923 Required Only Extensions Last Year, With a Few Exceptions

Pipe line construction did not occupy the place of importance in 1924 it did in 1923, when many new fields were opened requiring either entirely new lines or extensions of considerable length. The new fields of last year were, as a rule, close to the important main lines of the big crude transporting companies. The most notable exception to this rule was the Luling Field in Caldwell and Guadalupe Counties, Texas, which was important enough to warrant the construction by the Magnolia Petroleum Co. of an 8-inch line from the field to its main system near Houston, a distance of approximately 80 miles. This line was put into use about midyear. So many other new fields, like Richland and Wortham and the new producing areas in North Texas; the big pools south of Okmulgee, Okla.; Cotton Valley, in Louisiana, and others, were near enough to already existing systems to require no more than comparatively short extensions. One of the longest lines built last year was the Magnolia Petroleum Co.'s big gas line out of the Louisiana Field, a welded line that attracted much attention in the course of its construction. In fact, 1924 was more noteworthy for the gas lines laid than for the construction of long pipe lines.

Pipe line building in Oklahoma did not reach major proportions with any company and was confined chiefly to branch lines to the new pools. Some of these were 8-inch lines of some length serving fields of large production. A 90-mile line was the longest laid in the State in the course of the year.

Oklahoma-Kansas

The Prairie Pipe Line Co. laid a combination 4 and 6-inch line from Burkburnett Station, in Texas, to Red Station, in the same State, a 30-mile line. It laid a 3-inch line from its Oklahoma-Texas main line over to Hambro, in Township 6s-5w, Jefferson County, Oklahoma. An 8-inch line was laid from Nuyaka, Okmulgee County, Oklahoma to Seminole, in Okfuskee County, a distance of 29 miles. This line serves the fields in the Holdenville district. Laterals were laid to Cromwell, Wetumka, Wewoka and other pools in that part of the State. The company laid 9-miles of 4-inch line from its main line to the Stroud Field. In Kansas, a 10-mile line of 4-inch pipe was laid to a new pool in Township 24-9, Greenwood County.

The Oklahoma Pipe Line Co. put the finishing touches on its combination of 8 and 10-inch line from the Hewitt Field to Duqueen, Ark., 167 miles distant. This was finished and put into use in February. The company also laid 90 miles of 8-inch line from Hewitt to Cromwell and other fields in that neighborhood and 35 miles of 4-inch line from Council Hill to Wetumka to serve new fields including the Papoose Pool.

The Cosden Pipe Line Co.'s most important job during the year was the laying of a 10-inch line from the refinery at West Tulsa, Okla., to Sapulpa, a distance of 9 miles. This line replaced two 6-inch lines between the same points. The same company also laid a 6-inch line from Sapulpa to a junction point 3 miles east of Sapulpa, and an 8-inch line from this junction point to Poloke, 3 miles distant from Bad Creek to Wewoka, a distance of 18 miles, a 6-inch line was laid, and from West Tulsa to Keystone, 16 miles, a line was laid consisting of 10 miles of 2-inch pipe and 6 miles of 3-inch pipe.

The Gulf Pipe Line Co. in Oklahoma laid but two new lies of importance; a 4-inch line from Henryetta to Cromwell via Okemah, a distance of 30 miles, and another line of the same size from Okemah to Deaner, 13 miles.

Since the completion of the gigantic and costly project of running a 12-inch pipe line from the Teapot Dome in Wyoming, to Missouri, the Sinclair Pipe Line Co. has done little in the way of laying important new lines. However, during 1924 an 8-inch line was completed from the Cromwell Field to Payson, Okla., a total of 24 miles. An 18-mile line of 8-inch pipe was taken up between Duncan and Hastings, Okla., and a 4-inch line laid from the Stroud Field, Lincoln County, to a main line 6 miles northwest of the field. In Texas, a 4-inch line, 24 miles in length, was laid from Electra to Vernon.

The Marland Refining Co.'s pipe line department laid a line to the Rainbow Bend Field in Cowley County, Kansas, connecting with its main line in Oklahoma and a line into the Pettit Pool in Osage County to its Burbank station.

The Ozark Pipe Line Co. laid a line from Tonkawa to Arkansas City, Kans.

Rocky Mountain Region

Pipe line work in the Rocky Mountain region slumped heavily in 1924 from the records of the previous years. There was very little demand for pipe lines due to the small discoveries of new fields and the main pipe work of the year was in the known fields where laterals and tank connecting lines were needed.

The Prairie Oil & Gas Co. laid a 4-inch line from the Moffat Field to Craig, in Colorado. This line is carrying the production of the Moffat wells to the tank farm at Craig, about 16 miles and a survey has been made for an extension of this line to Parco, Wyo., where it would carry the oil to the Producers & Refiners plant at that point if enough production is developed to warrant it.

The Producers & Refiners laid a 6-inch gas line 12 miles in length, from the Eight Mile Lake Dome in Carbon County to the Parco refinery to supply gas to the refinery and this firm also laid a 17-mile gas line from the Baxter Basin Field in Sweetwater County, to the city of Rock Springs to supply that city with natural gas.

The Midwest Refining Co. laid a 4-inch line 27 miles from the Hogback Field in New Mexico to the railroad to carry the production from the Hogback wells.

The Intermountain Water & Development Co. laid a 20-inch pipe line of wood stave pipe, from the Tisdale Dome, 8 miles west of Salt Creek, to the Salt Creek Field to serve the field with water from the Tisdale water well. The mail line is finished, but the laterals in the field are not all done as the year closes.

Several promotions are scheduled for 1925 to carry the gas on the Wellington Dome in Colorado to Cheyenne and Denver. The Midwest Refining Co. has a line of 12-inch pipe stored alongside the tracks in the Big Horn Basin for a gas line from Buffalo Basin to Greybull and a survey has been made by the Ohio Oil Co. for a gas line from the Baxter Basin Field to Salt Lake City, Utah. An oil line is in prospect from the Fort Collins Field in Colorado to connect with the Sinclair line from Salt Creek to Kansas City at some point in Wyoming, when the Fort Collins Field reaches a point where the production would warrant it.

Louisiana-Arkansas

A number of important pipe lines were completed during the past year in the Louisana-Arkansas territory. The Standard Oil Co. completed an 8-inch line which extends from the Cotton Valley Field in Webster Parish to the main line in the Homer Field, 11 miles in all. This line was the first to afford an outlet for the rapidly increasing production of that district.

The Standard also completed a line from a point near De Queen, Ark., on the Oklahoma-Arkansas State line, to Moore Station, near Shreveport. The line is 200 miles long and consists of 181 miles of 8-inch and 19 miles of 12-inch.

They have finished a loop in their line from El Dorado to Haynesville which consisted of 8-inch pipe.

The Gulf Refining Co. started an 8-inch line from the Dubberly tank farm, just east of Shreveport, to its White tank farm at El Dorado, Ark., which was completed and handling oil on August 15. The line is 62 miles long and adds 12,000 bbls. capacity to the pipe line facilities from this district. The company has a complete gathering system through the El Dorado and Smackover fields.

The Gulf also completed a 6-inch loop from Dubberly to Timpson, Tex., on August 1, covering a distance of 42 miles. They have secured a right-of-way from the Arkansas Field to connect with their main line to Port Arthur for the laying of an 8-inch line.

The Crusader Pipe Line Co. has under construction a 70-car loading rack about 2 miles south of Cotton Valley. At the close of the year the company was putting in gathering lines with 6-inch laterals and building one centralized treating station to take care of the entire production of their leases in that district. The loading rack is practically completed and they expect to have the entire system ready to operate by February 10.

Crusader Buys Pipe Lines

The Crusader Pipe Line Co. purchased the holdings of the Empire Pipe Line Co. in Arkansas for a consideration said to approximate $400,000. The property consists of a 4-mile trunk line in the Smackover Field, with gathering lines through the field, the main line terminating at a loading rack at Smackover; also an 80-acre tank farm with five large pits containing some 450,000 bbls. of crude oil not yet treated.

The Crusader Co. also purchased the pipe line owned by the Arkansas Pipe Line & Navigation Co., which runs from the Smackover Field east to the Ouachita River where extensive storage facilities were provided and from which point the oil is shipped via barge lines to points on the coast.

The Louisiana Oil Refining Corp. completed an extension of its Shreveport-El Dorado line. The extension consists of 12 miles of 6-inch from El Dorado to Louann and a complete gathering system through the Smackover and El Dorado fields. They have completed a 6-inch line that runs from the south end of the Cotton Valley Field to their loading rack on the Louisiana and Arkansas railway about 4½ miles distant, where they have a 150,000-bbl. storage pit.

The Fortuna Oil Co. has completed a 6-inch line from the Cotton Valley Field to Crouchwood, where they have two 55,000-bbl. tanks and are contemplating erecting more. The line is approximately 6 miles long.

The Shreveport-El Dorado Pipe Line Co. laid 15 miles of gathering lines and completed the construction of a gravity station near Griffin, between Smackover and El Dorado, Ark., enabling it to do away with a number of pumping stations throughout the field. The company is also planning to move its main pumping station from Smackover to Griffin in the near future.

Big Gas Line Programs Finished

One of the most extensive propositions of its kind that has ever been undertaken in this territory was completed during the past year at a cost of between $6,000,000 and $8,000,000, by the Magnolia Gas Co., of Dallas, Tex., which was organized early in the year under the laws of Delaware with a capital stock of 100,000 shares of no par value. The company began work immediately on a pipe line from the Webster Parish gas field of Louisiana through Panola County, Texas, to Beaumont, Tex., for the purpose of supplying the Magnolia Petroleum Co.'s refinery with gas for fuel and both Center and San Augustine, Tex., with gas. The main line is now completed and practically all the gathering lines laid.

The line is laid through the Cotton Valley Field of Webster Parish and through the Waskom gas field of Panola County to Beaumont, a distance of approximately 215 miles, considerable gas production in both these districts being owned by the Magnolia Petroleum Co.

The greater part of the line consists of 16 and 18-inch pipe, with 14-inch pipe to be used from the Cotton Valley Field to the booster station at De Berry, in Panola County.

Contracts have been made for sufficient additional gas to keep the line supplied with its full capacity, rated at 65,000,000 feet per day.

The Excelsior Pipe Line Co. of Bastrop, La., representing the Henry C. Morris interests of Dallas, Tex., completed the construction of a gas line beginning 2 miles north of Bastrop in the Swartz area where the Morris wells are located and extending south across the Ouachita River to the site of the Brown Paper Mill Co. in West Monroe, a $2,000,000 mill just completed. It is expected the line will not only furnish fuel to the Brown Mill but to many other manufacturing enterprises in that territory and possibly gas for domestic purposes. The line is 24½ miles long and consists of 10½ miles of 8-inch pipe, 9½ miles of 10-inch and 4½ miles of 12-inch pipe.

The Bethany Oil & Gas Co. completed a gas line from Greenwood to Waskom, Tex., which connects with their Shreveport main line at Greenwood. The line consists of approximately 8 miles of 10-inch, 8-inch and 6-inch pipe and has been connected up with nine wells which have an open flow of 150,000,000 feet of gas per day. Cost of construction amounted to nearly $100,000.

The Reserve Natural Gas Co. laid a 14-inch line from Shongallo in the Sarepta gas field in Louisiana to connect with their 16-inch line at Mooringsport, La., approximately 42 miles in length.

The Oil Fields Gas Co. completed a gas line from the gas field around Sarepta to Cotton Valley and from Cotton Valley to Bellevue, furnishing both the latter fields with gas. The line consists of 30 miles of 4-inch and 6-inch pipe.

The Palmer Corp. at the close of the year was building an extension of its gas line from its Elm Grove, La., gas compressor staation to Sligo, where it will connect with six wells recently completed in the 1,900-foot sand in that district. The new extension is a 4-inch line, 7 miles in length, connecting with their 12-inch line at Elm Grove.

The Houston Oil Co. laid a gas line from the Smackover Field to Camden, Ark., following the right-of-way of its oil line through the same territory. The line starts from Section 31-15-15, in the heart of the heavy oil Smackover Field, where a number of wells which were deepened resulted in big gassers. The Houston Oil Co. uses the gas for its refinery at Camden and also for a gas supply for that city.

A number of independent gas companies have been formed for the purpose of utilizing the gas now being produced in the north end of Webster Parish, in Louisiana, and are supplying gas to Minden, Springhill, Sarepta, Cotton Valley and Shongaloo, in Louisiana. The north line, supplying Minden and Springhill has

(Continued on Page 158)

At This Refinery Every Tank Is A Columbian Improved Bolted Steel Tank

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The high quality of Columbian Improved Bolted Tanks is reflected in this unrivaled field organization. Each unit carries adequate stocks and maintains experienced and efficient erection crews.

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C. R. Gallagher & Co.	Los Angeles, Santa Fe Springs, Long Beach, Huntington Beach, Wingfoot, Brea, Taft

COLORADO

Miller Tank Company	Fort Collins,

KANSAS

Lancaster Tank & Supply Company	Winfield
R. E. Young	Coffeyville

KENTUCKY

Tracy Supply Company	Bowling Green

LOUISIANA

Cypress Tank Company, Inc.	Shreveport, Haynesville, Cotton Valley

OKLAHOMA

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Roy Brownrigg	Bristow
Day & Hammack	Tulsa, Sand Springs
Joe Douglas	Okmulgee, Wetumka
Haren Tank Company	Ponca City, Tonkawa
Service Tank Company	Ardmore, Wilson, Healdton
Southwestern Tank Company	Pawhuska
R. E. Young	Okemah, Cromwell,

TEXAS

Federal Tank Company, Inc.	Corsicana, Mexia, Wortham
Graves Tank Company	Mirando City, Laredo
Lincoln Tank Company	Electra, Luling, San Antonio, Big Lake, Corsicana, Mexia, Wortham, Wichita Falls, Houston, Archer City, Holliday
Petroleum Tank Company	Houston, Mexia
Mine & Smelter Supply Company	El Paso
Service Tank Company	Cameron, Minerva

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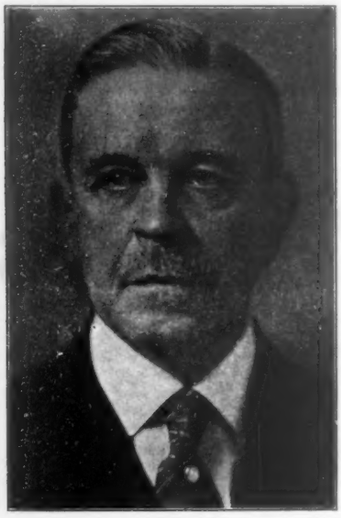
Conservation Board Creation Epochal

Industry Has Reached Phase of Development Where Fundamental Changes With Direct Influence on Its Operations May Result

By L. M. Fanning.

Creation of the Federal Oil Conservation Board by President Coolidge promises to be an epochal development in the oil business. It carries with it possibilities of changes of a fundamental nature. To say that it presages Government supervision is not to state the facts, but it does reveal the development of that tendency to the point where Government



Secretary of the Interior Work

and industry must get together and decide whether that is not desirable.

If anything of that nature occurs or if there grows out of the study any important change in the laws under which the petroleum industry operates, it means a new era. Previous changes of a fundamental and structural nature in the petroleum industry have been largely dictated by economic developments and the industry has on the whole been permitted to work out its own problems. The prsent problem works back to production, the finding and development of crude oil, and involves a condition peculiar only to petroleum.

Ever since the industry started, periods

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General Edgar Jadwin

of overproduction have been encountered and while this is the particular matter stressed at present, lack of adequate supply, another condition not unfamiliar in the petroleum industry, is as important a consideration. Some of the striking changes that have occurred in the industry and have led up to the action taken by President Coolidge are worth considering.

Pre-War Development

After a place was found in industrial and domestic life for a product entirely new and mysterious, the progress of the industry up until a few years prior to the outbreak of the World War had been relatively orderly, marked by the finding of sufficient oil to keep pace with what in the light of later developments may be termed a gradual increase in the use principally of kerosene and lubricating oils. During this era producing op-

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Secretary of Commerce Hoover

tation and refining facilities became concentrated in the hands of a few comerations were largely in the hands of a great many small operators. Transporpanies and mainly in the hands of the old Standard Oil Co.

At the time of the dissolution of the Standard Oil Co., the oil industry was beginning to be influenced by the factor of discovery of new sources of oil of large immediate and potential yield, the opening up of new prolific territory. In 1911 the status of petroleum demand represented no striking change from the decades preceding, except that the automobile was coming into its chary use. Kerosene, which, had it developed as the principal source of light and heat, would have given the industry its public utility problems, was in secondary demand, affected by artificial gas and the rapid growth in the use of electricity. Lubricating oil demand merely kept pace with industrial expansion, and fuel oil utilization was largely confined to the Pacific Coast and to a few railroads.

When the World War broke out the petroleum industry was well on its way into an entirely new era, an era of expansion. Cushing might be said to have been the industry's gesture of encouragement to the automobile. The Casiano, Potrero del Llano and Cerro Azul wells in Mexico were the roaring challenge of petroleum to coal.

Intense competition in the petroleum industry, accompanying this growth of entirely new uses, began to be manifest in the early days of the World War. It was accentuated as the demands of war expanded these new uses to great proportions practically over night.

Influx of Capital

The problem the industry had throughout the World War was to supply enough oil. There was a great influx of capital into the industry, large new producing areas were opened up, transportation, refining and marketing facilities were rapidly expanded. By the end of the war the component units of the oil industry were multiplied in practically every branch, and included new companies with large resources and extensive operations in every department of petroleum activity. Gasoline had become the principal product of petroleum, but also taxing the industry's ability to supply it in sufficient quantity, was fuel oil demanded for use in industrial plants and on naval and merchant vessels converted from coal burning.

The problem during the war, as stated, was to supply enough oil. It involved not only the finding of new production but the extension and adjustment of refinery operations so that the products of principal demand, namely gasoline and fuel oil, could be furnished, and also the expansion of distributing and transporting facilities. The problem was solved by the petroleum industry which voluntarily regulated itself in cooperation with the Government.

There was, in effect, a suspension of the anti-trust laws so that, properly supervised, the industry could function cooperatively in all its branches in the

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Secretary of the Navy Wilbur

most efficient way. It was found that this could be done most effectively by unhampered, but directed private operation.

The war left some serious problems which are still predominant. Petroleum was established as a national necessity and a principal factor in considering national defense. After the war we had our international oil correspondence. Conservation of petroleum not only had its Governmental angle but was one in which the petroleum industry was vitally concerned as it related to improved methods of recovery, improvements in refinery methods to bring about increased yields and more efficient utilization.

Due to the phenomenal increase in the use of the automobile, petroleum's era of expansion continued after the World War. In 1919 and particularly in 1920 a fresh influx of capital came into the petroleum business and competitive con-

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Rear Admiral H. H. Rousseau

ditions in all branches have increased in severity ever since. The wide public use of the automobile and the translation of the industry's problems into gasoline price fluctuations put these problems in the public limelight and lent emphasis to the questions of supply and demand and conservation. As it happened the impetus furnished by the apparent shortage conditions of 1920 resulted in the development of large new producing areas, culminating in the concurrent peak production of eight new pools in 1923. Since 1920 the industry has al-

(Continued on Page 220)

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Secretary of War Weeks

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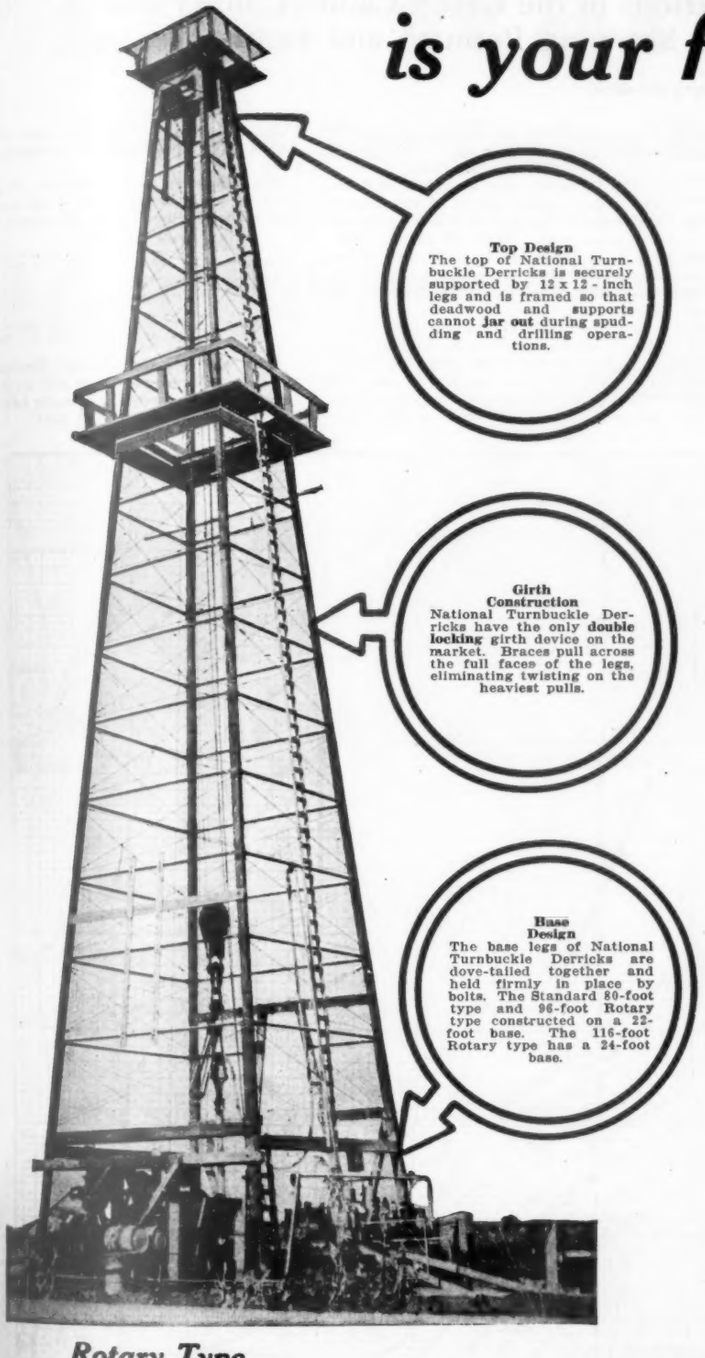

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The base legs of National Turnbuckle Derricks are dove-tailed together and held firmly in place by bolts. The Standard 80-foot type and 96-foot Rotary type constructed on a 22-foot base. The 116-foot Rotary type has a 24-foot base.

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264

Development Near Wichita Mountains

Hopes for Oil Field of Large Proportions in the Grady-Caddo County District. Preliminary Structure Map Showing Permian and Pennsylvanian

By Harry Hotchkin

For a long time it has been believed that the territory bordering the Wichita Mountains should contain areas favorable for accumulation of oil and gas. Structures drilled at Cement, Chickasha gas field, Lawton, Duncan and Walters, have shown the existence of satisfactory reservoir beds and an oil source, verifying this belief.

With this as a past, operators familiar with the more particular conditions in the Cement-Chickasha gas area, have hoped to unearth an oil field of large proportions in this Grady-Caddo County district.

This hope has been kept alive by two facts: first, the Chickasha gas field has proved to be the most outstanding gas field ever developed in Oklahoma; second, the Cement oil field has had remarkable steady production, not from large wells but from moderate ones with unusually small decline.

The cement production has been looked upon as an outlet or migration from some larger pool in the general vicinity. The field is practically all owned by the Magnolia Petroleum Co. and with the oil depression of the last few years it is certain that development there has not been pushed to any degree. Only about a year ago the Magnolia Pipe line reached Cement and only since that time have the few independents in the field received the market price for their oil.

Chickasha Gas Area

The Chickasha gas area has produced the largest volume of gas of any area in Oklahoma. The field is 8 miles long and 1¼ miles wide. With 69 wells producing as of December 31, 1924, the volume was 803,000,000 feet. A year previous, the volume was 848,000,000 feet from 58 wells.

An iden of the record-breaking class of the Chickasha area can be realized when it is remembered what great excitement was caused by the old Morris gas field when, with 14 wells ,the maximum output was 96,000,000 feet in December, 1921, and yet within 90 days there was not a well remaining of commercial value.

The following is a production statement by years of the fields in the territory bordering the Wichita Mountains.

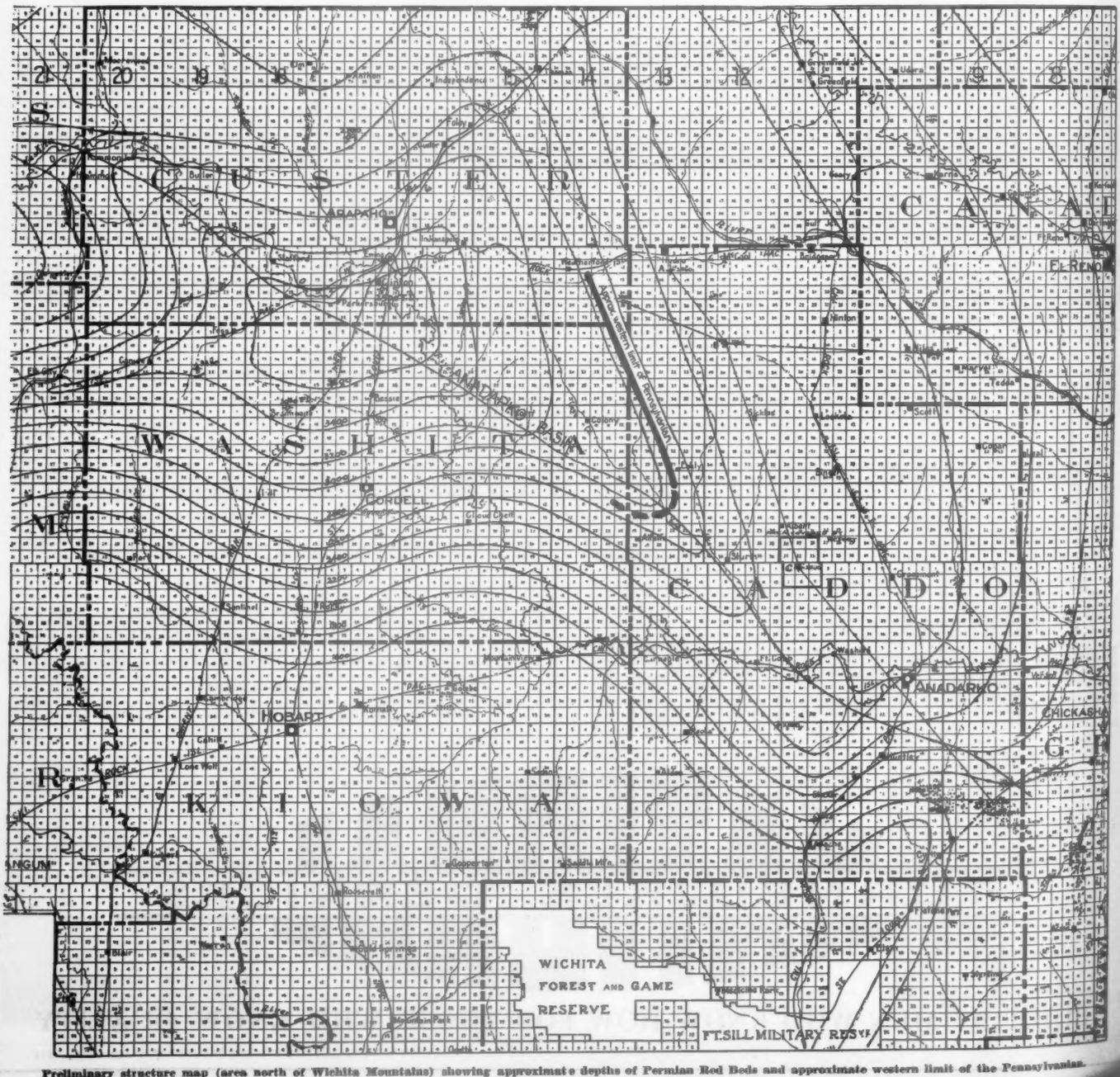
Gross Production

	Barrels		
Field—	1922	1923	1924
Cement	878,375	823,467	736,187
Walters	662,840	494,940	388,580
Duncan 4,835,155		3,426,620	2,897,844
Sayre		92,585	134,332

Chickasha gas field—Dec. 31, 1922, 225,000,000 ft.; Dec. 31, 1923, 848,000,000 ft.; Dec. 31, 1924, 803,000,000 ft.

With the new year Grady, Stephens and Caddo Counties are busy with several new tests while more will probably follow

(Continued on Page 158)



Preliminary structure map (area north of Wichita Mountains) showing approximate depths of Permian Red Beds and approximate western limit of the Pennsylvanian.

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Manufactured by

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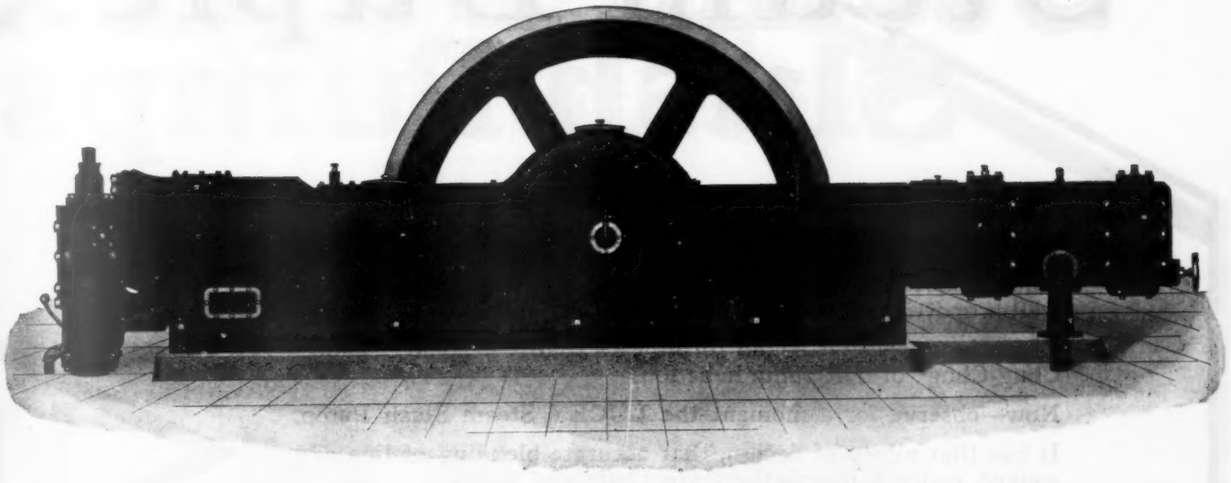

At the booth of The Miller Improved Gas Engine Company at the Petroleum Exposition at Tulsa.

The question uppermost in the visitor's mind was the power operating the Gas Engine.

Some said it was operated by Electric Motor.

A notice was posted warning visitors to keep away from the exhaust pipe to avoid being burnt.

There was no sound so general in Gas Engine exhaust to warn them.

The Watts-Miller Gas Engine Gas Compressor is the smoothest operating machine ever offered the Gas Industry.

This Engine shows no vibration whatever, every joint fits, the whole assembly functions perfectly.

Because of the high class design and care taken in its general construction.

The engine not only runs smoothly—its ease in starting and being absolutely safe. The accessibility of the Watts-Miller is a feature in itself.

Valves can be removed without breaking a pipe joint or disturbing valve gear.

Don't have to dismantle any parts to make replacements, there is no overlapping, so general in most designs.

The best evidence of any equipment is service—this is what the purchaser is looking for.

These Machines installed and operating are handling considerable more gas than our guarantee.

Highest Quality Throughout.

Beautiful in Appearance.

Extremely Simple Design.

Great Strength in Structure.

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There is nothing more pleasing to the eye of an engineer than a well-proportioned, well-balanced slush pump.

There is no sweeter sound to his ears than the steady "Chug-Chug-Chug" of that pump in action.

Now—observe for a moment the LUCEY Steam Slush Pump.

It has that nicety of design, that accurate blending of line and weight, which betokens the perfect balanced pump.

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Service is what you want and expect in a slush pump—then specify LUCEY Steam Slush Pump.

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Check it part by part with any pump

It matters not how closely you examine the LUCEY. In fact we prefer that your examination be as particular as possible. We will rest content with your findings—for we already know what the result will be.

A short description of the LUCEY Slush Pump would read like this:

Steam cylinders are made of close-grained gray iron and are designed and tested for working pressures up to 150 pounds. The steam chest for both cylinders is of one piece construction and is bolted through the cover to the cylinders. Valve stems have double guides, assuring perfect alignment. All working parts are carefully machined and tested at all points of contact to insure the greatest accuracy and strength.

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Russian Oil Industry Review in 1924

Mining Engineer Now in Mid-Continent Analyzes Present Condition of the Petroleum Production Under the Soviet

By Basil B. Zavoico

(This is the second of Mr. Zavoico's articles and in order to picture the Russian situation as a whole, the reading of the first article is advisable; published in the December 4 issue.)

RUSSIAN OIL INDUSTRY, 1924 REVIEW
Production and Stocks on Increase; Improvement in Organization. High Production Cost.

Balance Sheet on December 1, 1924

CREDIT—			
(a) Production last year:—		Bbls.	Bbls.
1. Azneft		31,300,000	
2. Grozneft		11,800,000	
3. Embaneft		800,000	
4. Others		400,000	44,300,000
(b) Stocks on December 1, 1923—			
1. Azneft		2,100,000	
2. Grozneft		600,000	
3. Embaneft		100,000	
4. Others		300,000	3,100,000
5. Syndicate			10,900,000
6. Consumers			4,200,000
Total			62,500,000
DEBIT—			
(a) Expected Sales—		Bbls.	Bbls.
1. Interior Mkts.		27,600,000	
2. Exports		5,200,000	32,800,000
(b) Stocks on December 1, 1924—			
1. Azneft		1,900,000	
2. Grozneft		1,700,000	
3. Embaneft		200,000	
4. Others		400,000	4,200,000
5. Syndicate			16,600,000
6. Consumers			8,900,000
Total			62,500,000

(a) It is evident that under present conditions the figures are hard to collect and the above table represents the summary of various papers.

(b) The stocks are divided as held by one of the major divisions, by the syndicate, and by consumers. The syndicate and the major divisions are fundamentally a unity. The consumers represent government-owned railroads, factories, cooperatives, etc. Any sharp division under circumstances is impossible.

The operating year in Soviet Russia is from October 1 to September 30.

A 50 per cent increase of stocks for last year is to be noted.

In May, 1921, the Russian oil industry was nationalized. The centralization was effected to a greater extent than in any other industry in the Soviet Russia; the reasons for the comparative success of the enterprise were explained in the first article. The industry is supervised by the Council of National Economy (Sovnarkhoz) with the Comissariat of Foreign Trade in an advisory capacity. The distribution of petroleum products in the interior market is controlled by the Central Fuel Bureau (Glavtop); the foreign market is operated by the Comissariat of Foreign Trade in conjunction with the All Russian Petroleum Syndicate. This syndicate, with offices in Moscow, is the organization representing the three major regions of the oil industry, and the general policies, financing, exports, etc., are determined by the syndicate. The Baku region (Azneft) has three representatives, the Grozny fields (Grozneft) is represented by two officers, and the Emba district (Embaneft) by one officer in the executive council of the syndicate. The chairman of the syndicate is appointed by the chief of the fuel bureau.

Of the gross receipts 50 per cent are controlled by the syndicate for the maintenance and development of the fields and trading branches; 50 per cent are distributed by the fuel bureau; 30 per cent of the net income, if any, is directed to the State treasury. Deficits are covered by Government subsidies, directly or indirectly. The organization of the three subdivisions (Azneft, Grozneft and Embaneft) is similar and the Azneft only will be described in detail.

Azneft Administration

The Azerbaijan* Petroleum Administration absorbed after nationalization over 250 private companies in the Baku district. By 1921 the records, the management, and the conditions in the fields and refineries were in a state hard to realize. It is to the credit of the present administration that order was installed. The terms and the general type of organization of the new administration follow closely the corporation type, though in realty the structure is a military one. It is only fair to the Azneft to point that under circumstances no other road was open. The Azneft is managed by the board of directors. The chairman of the board is appointed by the Central Government and under present conditions he is the virtual dictator of the Apsheron Peninsula. The board, besides the chairman, includes the acting chairman, assistant managing director, and six field directors. The organization of the whole district is divided in eight departments: (1) Main office; (2) accounting; (3) operating, supervises six regional offices at the main fields and drilling organizations; (4) refineries, six chain groups; (5) storage and pipe lines; (6) electric power; (7) transport and (8) equipment and supplies.

*Azerbaijan is the name of the Tartar republic within the boundaries of which Baku is situated. Aberbaijan is a member of the Union of Soviet Republics and is controlled by Moscow. Only matters of minor importance are settled by the local assembly.

Production Compared

Usually the present production is compared with the figures of 1913; it seems however that 1916 presents a better figure. The production was increasing since 1913, not because of unusual war pressure, but according to a general development program. The comparison table follows:

	1916 Bbls.	1921-1922 Bbls.	1922-1923 Bbls.	1923-1924 Bbls.	1924-1925 Estimated
Baku	55,810,000	21,100,000	25,300,000	31,300,000	35,700,000
Grozny	12,330,000	10,400,000	10,900,000	11,800,000	12,300,000
Emba	1,820,000	970,000	975,000	830,000	1,220,000
Total	72,800,000	32,400,000	37,200,000	44,000,000	49,000,000

In other words, in 1916 the daily production of all Russian fields amounted to 208,000 bbls., in 1923-1924 it was only 140,000 bbls. The Baku district in time past had a yearly average of 250,000 bbls. daily, and in a few instances 400,000 bbls. were reached.

The figures in the table above compare favorably with those planned by the syndicate; for the 1923-1924 operating year Baku production was 98 per cent of that planned. Grozny 103 per cent and Emba 90 per cent. The Baku district has about 1,840 wells in exploitation, the Grozny fields about 285, and Emba 50 wells. Per well per day production (average) in the Baku fields is therefore 48.5 bbls., in Grozny district 118 bbls. and in Emba fields 47.5 bbls.

The main part of production in the Baku district comes from bailing operations. Table showing methods of production and percentage of total production in Baku district follows:

	Pct.
1. Bailing	65
2. Air lift	31
3. Gushers	10
4. Various	3
5. Pumping	1

In the Grozny fields gushers account for about 70 per cent of production. The pumping is being introduced now with favorable results. The gushers were coming in recently in the Baku district: The Surachani Field well No. 67 entered the fifth horizon and started with a flow of 12,000 bbls., but salt water and sand reduced the production to 5,000 bbls. in a few days. Sand alone amounts to about 12 per cent of the ejected volume. This well, however, is unfavorably located and the geologists are not discouraged. The Bibi-Eibat gushers had flush production of about 35,000 bbls.; the later reports are not yet obtainable. The future of the reclaimed area of Bibi-Eibat Sound is certainly brilliant. There are about 40 wells drilling at present in this field. The field consumption of petroleum in the Baku fields amounted to 11 per cent of gross production, and in Grozny to 17 per cent of gross. This includes fuel for power stations, homes, losses in tanks, etc. Prerevolution consumption averaged 9 per cent. The Azneft is studying this problem now and in 1924-1925 hopes to reduce field consumption in Baku to 9 per cent and in Grozny to 12 per cent.

Wildcatting, as such, is still unknown in Russia; the Baku and Grozny fields have been in operation since the oil industry began; no new important areas were brought in. The Emba and Ferghana fields are so far of minor importance. The Azneft is drilling few wells outside of known fields in the Apsheron; but being located in areas of hand-dug wells with long production they can hardly be called wildcats.

The first impression of the above paragraphs is that the Petroleum Syndicate is on the road to recovery. The following lines will show that production runs away from consumption and exports in an alarming way. Cost of production is very high as well. Already there is a strong tendency in Moscow to curtail production and drilling operations. Because many men will be thrown on the street if this opinion will prevail, the Azneft officials are opposed to curtailment.

Drilling Operations

The drilling statistics for the three major divisions follow:

	Year '21-'22 Ft.	'22-'23 Ft.	'23-'24 Ft.	'24-'25* Ft.
Baku	49,400	165,500	256,000	279,000
Grozny	11,200	51,500	127,300	175,000
Emba	700	1,625	5,200	8,500
Total	61,300	218,795	388,500	462,500

*Estimated.

The majority of the wells are drilled by the Russian Standard Rod method; this equipment is of old type, very slow in operation and high in cost. There are at present in operation in the Baku district about 160 Russian Standard rigs, about 60 rotaries and five cable tools strings. Because the rotary method is new for the field and the behavior of different strata during drilling operations is not yet well known, the progress is slow. For example, in June 1924, 55 rotary rigs made 9,200 feet, or only 5.6 feet per day. The Russian standard rigs during the same month numbered 147 and made 15,750 feet or 3.3 feet per day. The American standard rigs operate in new territory and their records are unavailable.

A very important factor in production is the bringing in exploitation of old wells, abandoned during the revolution. Approximately 150 wells were thus brought in since 1923. Cleaning out, deepening, cementing, or casing are the operations necessary in bringing the abandoned holes in production shape.

Refineries

The Balachani - Sabuntchi - Ramani crude has a gravity of 30 degrees Baume and contains 6 per cent gasoline, 33 per cent kerosene and 57 per cent lubricating oils. Some of the Surachani oils run up to 50 degrees Baume with 49 per cent gasoline and 44 per cent kerosene; these oils are known locally as "white petroleum." However, most of the Surachani oils are of 34-35 degrees Baume.

Prior to nationalization there were 36 privately operated refineries in Baku, five in Grozny and a number of refineries along the Volga River, from Astrachan to Nijni Novgorod. All the refineries of Baku were taken over by the Azneft. Their combined capacity at the present time is 22,000,000 bbls. per year or 62,000 bbls. daily. This amounts to two-thirds of Baku production. The refined products obtained from Baku plants last year follows: (Approximate figures):

Gasoline	12,000,000 U. S. gallons
Kerosene	5,280,000 bbls.
Lubricating Oils (All Kinds)	3,900,000 bbls.
Fuel Oil	8,560,000 bbls.
Residium	2,000,000 bbls.

Though the average gasoline content of oil in Baku is about 6 per cent, only 3 per cent is recovered during two or three winter months and barely 1 per cent in summer. A careful research is being made now with the purpose of increasing the gasoline extraction. A study of lubricating oils is followed also with the view of seriously competing in European markets.

The combined capacity of the Grozny refineries for 1923-24 is 10,700,000 bbls., or very nearly the production of the district. Emba refinery runs during the last operating year amounted to 700,000 bbls.

Electric Power Used

The fields of Baku are operated almost entirely by the electric power. Steam and internal combustion engines are used only in power stations and in outlying districts. The main power station is located in White Town, and the three substations in Bibi-Eibat, Ramani and Surachani. The monthly capacity of these four units is 29.000.000 kw hours; they consume 110,000 bbls. of fuel oil or 0.083 bbls. per kw hour. About 5 per cent of energy generated is used for station purposes, such as pumps, small shops, etc. The monthly energy distribution follows:

	KW Hrs.
Fields	14,770,000
Refineries	840,000
Plants	174,000
City of Baku, including trolley	514,000

By the end of 1923-1924 operating year there were in operation the following number of major power units:

Electric Generators	19
Electric Motors	1,644
Steam Engines	370
Internal Combustion Engines	242
Compressors	123
Transformers	220

Transportation Difficulties

Transportation of petroleum products is the first serious setback for the industry. No matter how the fields and refineries progress, the transportation facilities lay behind and force at least temporary shutdowns. The following figures based on Government reports and other information, appear to be trustworthy. They consider only the Baku region:

	Bbls.
Monthly exports to Astrachan	1,800,000
Monthly exports to Batoum, by RR	240,000
Pipe line to Batoum, kerosene only	360,000

Considering the Astrachan is closed during at least four winter months, the yearly transport capacity amounts to 21,600,000 bbls. This figure checks closely with refinery output, but is only two-thirds of present production. About 10,000,000 bbls. are being stored per year.

The cost of shipping to Astrachan and North up to Nijni Novgorod and even to Petrograd (via canal system) are reasonable. The waterways are under the syndicate and the financing of their operations is included in the budget of the Azneft. However, the railroad charges fixed by Central Government are excessive and affect seriously the export possibilities. From Baku to Batoum the present charges per barrel are 50.5c and from Grozny to Novorossisk 42 cents per barrel. The pipe line charges 53 cents per barrel for pumping kerosene from Baku to Batoum. The syndicate is attempting

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Expect General Increase in Exports

Current Prices Believed to Be Too Far Beneath Average to Be Considered Normal and Advance Is Being Looked for This Year

By N. O. Fanning

NEW YORK, Jan. 26.—Oil exports from New York during 1924 amounted to approximately 900,000,000 gallons, based on the rate for the first 10 months of the year. During the 10 months New York exported 49 per cent of the wax and 42 per cent of the lubricating oils exported from the entire country, these being the chief products shipped from this port.

Exports of gasoline during the first 10 months aggregated 231,309,065 gallons, kerosene 267,298,821 gallons, gas and fuel oil 32,986,562 gallons and lubricating oils 137,159,455 gallons. New York's shipments of gasoline were 23 per cent of the country's total, kerosene 35 per cent, gas and fuel oil only 2.7 per cent. Exports of paraffin wax for the 10 months amounted to 160,320,818 pounds.

The first half of 1924 was featured by unusually heavy exports, but there was a decline during the summer months. In the Fall exports began to increase again and in the closing months equaled the volume of the early months of the year. Exports of kerosene particularly showed gains during the closing three months.

Exporters in this territory, however, look forward to general increase in the oil export business this year. Inquiries from abroad and contracts for delivery of oil to Europe already closed indicate a substantial improvement over the next few months.

The following table shows exports from New York by months during the first 10 months of 1924 (figures of Bureau of Foreign and Domestic Commerce, in gallons except wax, which are in pounds):

	Wax	Gasoline	Kerosene	Fuel and Gas	Lubricants
January	21,236,967	27,059,932	25,474,322	8,199,427	12,956,076
February	18,744,823	32,686,989	26,088,519	2,613,404	15,379,682
March	12,648,458	23,425,333	27,195,349	2,337,231	13,391,203
April	17,714,454	24,674,950	27,829,857	630,822	16,284,035
May	19,870,006	16,465,913	30,016,691	2,974,490	18,830,292
June	12,764,701	22,907,697	23,812,022	4,699,171	15,258,654
July	13,484,707	16,199,947	20,031,533	996,369	9,409,059
August	15,507,162	17,667,531	23,109,199	1,632,039	11,088,769
September	13,588,263	26,464,094	29,749,893	4,730,858	9,963,103
October	14,761,277	23,766,679	33,991,436	4,172,751	14,598,583
Total	160,320,818	231,309,065	267,298,821	32,986,562	137,159,455
Total, U. S.	322,562,613	992,093,402	760,280,482	1,213,669,322	320,696,020
P. C., N. Y.	49%	23%	35%	2.7%	42%

The percentage figures show New York's importance to the country's oil export trade. Although in gallons, kerosene exports were largest, with gasoline next, the volumes of lubricating oil and wax shipments were much larger with relation to the country's total export trade in these products. The explanation of this is that eastern refineries, especially those around New York and western Pennsylvania, have specialized in the manufacture of lubricating oils and wax, using in part Pennsylvania crude which cannot in quality be duplicated anywhere else in the world.

Export Prices

Oil export prices at New York were unusually stable during 1924, but were on a lower level than at any time in the last five or six years. From that viewpoint, the export trade was not as satisfactory, the total value of exports being estimated to be considerably under those for 1923.

Gasoline export prices started the year at the bottom and worked slightly higher. In cases motor gasoline was quoted at 24.40 cents per gallon on January 1 and closed the year at 26.65, the increase of 2.25 cents representing the extreme range for the year. Bulk gasoline opened at 10.50 and advanced to 12.50 at the close.

Kerosene slumped slightly during 1924, but the extreme range of prices during the year was approximately one-half of a cent.

Lubricating oils and wax, on the other hand, advanced during 1924. Lubricants show gains of 5 to 9 cents per gallon in barrels, and wax advanced about 2 cents per pound. The gains started in the spring and prices advanced slowly up to the close of the year.

A study of gasoline and kerosene export prices at New York during the last 10 years is interesting as indicating the state of the general oil price situation. New York export prices have always been representative of the markets throughout the United States, so far as fluctuations are concerned, although the actual quotations, of course, differ.

Prices during 1924 represent the result of a steady decline since January, 1921, when prices were at the peak for the 10-year period. Although a complete record of gasoline prices is not available, the record back through 1920 shows that cased motor gasoline sold at 40.75 cents per gallon on January 1, 1921, and slumped to a low since that year of 24.40, at which price it held on January 1, 1924. The advance in 1924 to 26.65 came late in the year, so that 1924 prices were generally at the lowest levels.

Bulk gasoline reached the peak of 24 cents per gallon in 1920 and opened 1921 at the same figure. This price seems high compared with current ideas of gasoline prices. Bulk gasoline now brings 12½ cents per gallon, just about half the peak price. At the commencement of the year 1924, however, it was quoted at only 10½ cents, a drop of 56 per cent from the high.

The following table shows the range of kerosene export prices at New York during the last 10 years; also gasoline as far back as 1920, when first quotations were published (prices in cents per gallon):

	Gasoline		Kerosene: Standard White			Kerosene: Water White		
Jan. 1	Cases	Bulk	Bulk	Bbls.	Cases	Bulk	Bbls.	Cases
1925	26.65	12.50	6.50	13.50	16.90	7.50	14.50	17.90
1924	24.40	10.50	7.00	14.00	17.15	8.00	15.00	18.15
1923	28.75	15.50	7.00	13.25	16.50	8.00	14.25	17.50
1922	33.25	19.00	8.00	15.00	18.50	9.00	16.00	19.50
1921	40.75	24.00	13.50	24.50	26.50	14.50	25.50	26.50
1920	34.00	.....	12.00	19.75	22.75	13.00	20.25	24.75
1919	.....	.....	8.25	17.25	19.25	.....	.....	.....
1918	.....	.....	6.50	12.50	16.50	.....	.....	.....
1917	.....	.....	4.50	8.65	11.75	.....	.....	.....
1916	.....	.....	5.00	8.65	10.75	.....	.....	.....
Range During 1924								
High	28.40	14.25	7.00	14.00	17.15	8.00	15.00	18.15
Low	24.40	10.50	6.50	13.50	16.90	7.50	14.50	17.90

The column showing standard white kerosene prices in bulk for export reveals that the current price, 6½ cents per gallan, is fairly close to the range from 1916 to 1918, and is 7 cents per gallon lower than the peak which prevailed at the close of 1920. The lowest level at which this product sold in bulk in the 10 years was 4½ cents, in 1916-1917.

Outlook for Gasoline

If export gasoline prices were available as far back as 1916, the trend would be approximately the same as that of kerosene prices. The current price levels, therefore, while representing an increase over the years 1916-1918, shows a considerable decline from the peak price of the period.

Despite the fact that the consumption of gasoline has kept on increasing year by year ever since 1916, new methods of recovery and the large supply of crude have changed the situation so that a repetition of 1920 prices may never occur. However, the current prices appear to be too far beneath the average for 1921-1923 to be called normal. The outlook is that prices will increase this year perhaps to the extent of 5 cents per gallon.

The outlook for all products for export is for an increase, due to the improvement in the crude oil situation. However, it is not certain that lubricants and wax will keep on going up, as factors governing these products have been different. They have not been depressed during the last two years to the extent that prices for gasoline and kerosene have been depressed.

GOOD NATURAL GASOLINE YEAR EXPECTED BY SECRETARY BOURQUE

By A. V. Bourque

Secretary Association of Natural Gasoline Manufacturers

The year 1924 was a disastrous one for petroleum and its products, including natural gasoline. Although the year 1923 closed with that product bringing but 6 cents, the first two months of the new year saw a steady advance until 10¼ cents was attained at the end of February, but from that time on until the middle of July the average price for Grade A was approximately 7½ cents. With the buying season starting late in July the price gradually rose until it reached 9 cents in December, closing the year at that figure. It is gratifying to note, however, that at no time did the price of Grade A go below 7 cents, a better year in price respect than 1923.

One of the important features of 1924 was the elimination of natural gasoline stocks in the closing months of the year. Heretofore, there has been a big demand in the summer months with a corresponding slacking up in the colder periods of the year. It has been customary in the past for natural gasoline manufacturers to carry large stocks from the middle of October until about June 1 with an accompanying low price. In 1924, however, the demand became so great that the summer months saw no gasoline going into storage, the demand being equal to the supply and the same condition prevailed until the end of the year. This condition marks an epoch in the industry and it is doubtful if conditions of the past in regard to storage will ever prevail again.

The refiner has come to appreciate the value of natural gasoline more and more and many contracts of yearly duration are being made to insure the refiner an adequate supply of natural gasoline at all times.

Many New Plants Erected

There was considerable more building in the year just closed, a number of large plants being completed, the capacity of which exceeded greatly the diminishing output of some of the older plants. Notable advances have been made in construction, practically all of the new plants being of the absorption type and the results of the charcoal plant built by Landreth Gasoline Co. (now Phillips Petroleum Co.) at Ibex, were such that there are several charcoal plants going in in the Oklahoma district as well as in the California fields at this time and, no doubt, an additional number of such plants will be built in connection with absorption plants in 1925.

Production Increases Yearly

The report of the Bureau of Mines gave the production of natural gasoline in the United States as 816,226,000 gallons for the year 1923, a daily average of 2,236,071 gallons. These figures look extremely low and an estimate of between 2,750,000 and 3,000,000 gallons daily will more closely approximate the 1924 output. When these figures are compared with the Government figures of 1913, which gave a production of 66,000 gallons daily, the rapid growth of the industry in the past 10 years can be readily seen. The production of straight run gasoline in 1924 was estimated at 20,500,000 gallons daily which would make the ratio of natural gasoline to straight run gasoline approximately 12 per cent.

Specifications Are Changed

In view of the large amount of high gravity, high recovery natural gasoline being manufactured in 1924, the Association of Natural Gasoline Manufacturers decided to change its specifications and on October 1, 1924, the following specifications were adopted:

Grade Double "A"—Recovery, not less than 90 per cent; end point, not over 375 degrees Fahrenheit; gravity, 80.0 to 87.9 degrees Baume.

Grade "A"—Recovery, not less than 90 per cent; end point, not over 375 degrees Fahrenheit; gravity, 72.0 to 79.9 degrees Baume.

Grade "Double B"—Recovery, not less than 85 per cent; end point, not over 375 degrees Fahrenheit; gravity, 84.0 to 92.0 degrees Baume.

Grade "B"—Recovery, not less than 85 per cent; end point, not over 375 degrees Fahrenheit; gravity, 76.0 to 83.9 degrees Baume.

Grade "C"—Recovery, not less than 78 per cent; end point, not over 375 degrees Fahrenheit; gravity, 80.0 to 90.0 degrees Baume.

It will be noted that Grades Doube A and Doube B were added to the new specifications while Grade D and motor natural gasoline were eliminated, there being very little of Grade D being manufactured, while specifications for motor natural gasoline had served their purpose and were obsolete.

So well have the specifications of the natural gasoline association proved their worth that practically all of the trouble about quality in the past has been entirely eliminated and the specifications more than any other one thing, have been responsible for the acceptance of natural gasoline by the trade generally.

Should Be Prosperous Year

There is no doubt but that the outlook for 1925, so far as the natural gasoline industry is concerned, is extremely bright. It is reported that the large contracts already made are greater in volume

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Science Is Increasingly Important

Movement for a National Organization for Petroleum Research Makes Much Progress During the Year. Latest Developments

By L. M. Fanning

Science is playing an increasingly important role in the oil game. In the field and in the refinery such great strides have been made on the technological side that the ordinary functioning of the industry has, over a period of a few years, been revolutionized.

The day of haphazard oil finding—of playing hunches and twiddling a peach twig—is in the romantic past, and with the definite arrival of the geologist in the oil fields has come the dominance of the engineer and the chemist in refinery construction and operation, to bring about improvements which are fast putting the industry on an entirely new basis.

Among these and engaged in separate activity is the inventor whose efforts in the unlimited field for research offered by petroleum are bearing fruit of the utmost significance.

From the angle of production the effect of the change that is taking place is easily demonstrated. Application of the science of geology has purchased a flood of oil during the past three years, while development of the cracking art has increased gasoline production to a point where it is of outstanding influence upon the relationship of supply and demand. But the importance of the scientific development will be the more notable, in that it will have such essential bearing on all activities, as oil pools become harder to find and the oil becomes scarcer.

Research has engaged the increased attention of the industry the past year, and there is every indication that each succeeding year will see further interest and practical work along research lines. This research covers geological problems, plant problems and work which is largely of academic interest. There is scarcely a company engaged in producing or refining which has not a staff of experts engaged for this purpose. The United States Bureau of Mines, the United States Bureau of Standards, large technical institutions such as the Mellon Institute, many universities and private industrial laboratories are carrying on investigations of petroleum problems.

Central Research Body

The agitation for a central research organization was one of the important developments last year. Those who are most active in this movement believe that possibly during the coming year something definite will transpire in the way of launching such an institution. The proposed organization would work with existing agencies and companies engaged in scientific research and serve to coordinate investigation of specific problems, eliminate duplication and engage in work on fundamental problems of a nature and involving time and expense which now precludes their handling by single companies.

One of the most important steps taken for research of the chemistry of petroleum is the recent appointment by the National Research Council of a committee on the chemistry of petroleum as a part of the division of chemistry and chemical technology of which Prof. J. F. Norris, of the Massachusetts Institute of Technology, is the head. Members of this committee are Dr. Benjamin T. Brooks, consulting chemist, New York, chairman; Dr. R. P. Anderson, technologist, American Petroleum Institute; Prof. J. R. Bailey, head of the department of chemistry, University of Texas; Prof. Cecil Boord, instructor of organic chemistry, Ohio State University; Dr. R. H. Brownlee, consulting chemist, Pittsburgh, Pa.; Dr. H. S. Davis, of the research staff of A. D. Little & Co., Cambridge, Mass.; Dr. Gustav Egloff, Universal Oil Products Co.; Dr. Harry L. Fisher, of the research staff of the Goodrich Rubber Co.; Dr. W. A. Gruse, in charge of petroleum research for the Gulf Refining Co. at the Mellon Institute; Dr. C. O. Johns, chief chemist, Standard Oil Company (New Jersey); Prof. T. B. Johnson, professor of organic chemistry at Yale University; Dr. E. Emmet Reid, professor of organic chemistry at Johns Hopkins University; Dr. N. A. C. Smith, United States Bureau of Mines; Dr. F. B. Thole, on the research staff of the Anglo-Persian Oil Company, London, and Dr. Gerald Wendt, head of the department of chemistry, Pennsylvania State College.

The committee's chief purpose is to stimplate interest in petroleum research among chemists and in university laboratories. It will be an agency for the purpose of compiling information and emphasizing particular research problems. Its first activity will be to prepare a list of research questions and to broadcast the subjects in the hope of encouraging interest among scientists in their practical solution. It has been the practice of the National Research Council through its various committees to act to some extent as a clearing house for information on specific scientific problems, and to make available facts as to the work already accomplished. In one instance the publication of one of its committee's list of problems resulted in over 100 research publications covering the specific problems. Similar procedure will probably be followed in connection with the committee on the chemistry of petroleum.

Wide Field for Effort

Discussing the field for chemical research, Doctor Brooks, in a paper which attracted considerable attention last year, said: "In the light of our present chemical knowledge of petroleums and the types of hydrocarbons which are probably contained in such oils, it ought to be possible for organic chemists to indicate what can, within reason, be done chemically with new raw material and along what lines research should be undertaken to achieve these ends. Even this is a task of no small magnitude, at least for an individual, and it is to be hoped that in view of the enormous spread and number of subjects for research others will contribute freely to this theme. It is only by laying out a program of work which competent organic chemists can agree upon as being attractive and rational that we can ever convince anybody that petroleum chemistry, using the term in a very broad sense, is worth while.

"It is a fair question to ask why, since we had this great quantity of raw material confronting us for about 60 years, such chemical research and industrial development along chemical lines has never been carried out. It has been suggested that we need a second Adolph Baeyer, or, in other words, that it has been for lack of brains that this development has not taken place—a rather grave charge against American organic chemists. Such statements were frequently heard during the early days of the revival of the American dye industry, and in 1914 certain importers told us that we could not produce pharmaceutical white paraffin oil like the Russian product because we did not have the technical skill, and also did not have the proper raw material. The results indicate that we have an abundance of both, as in this case, the only question is one of interest and effort in the right direction."

Stimulating Interest

The Petroleum Division of the American Chemical Society is devoting some attention to research in the way of stimulating interest in what is being done by all agencies. Early last year Dr. G. A. Burrell, secretary of the division, asked members to inform him of problems being investigated, where it was thought proper to divulge such information, so that through the division's bulletin the members could be kept advised as to what was being done. In this way the division was able to publish considerable information about research work.

The Government agencies, particularly the Bureau of Mines, Bureau of Standards and United States Geological Survey have carried on and are carrying on a wide variety of investigations of petroleum problems, and each year their contribution becomes increasingly important.

The American Association of Petroleum Geologists has a research committee and has devoted considerable thought to research work and to arousing interest in the financing of a modest program.

Dr. George Otis Smith, director of the United States Geological Survey, in a statement in The Oil and Gas Journal, said there is an immediate and pressing need for research studies in relation to petroleum production. "It is quite generally felt by oil producers," he said, "that geology has contributed much to the industry but they have no more reason to be content with the achievements of geologists than the operators of the first steamship had reason to be satisfied that they had attained the ultimate refinement in water navigation. A great improvement in method of exploration has been demonstrated, but if this country's oil resources are to be fully developed, this improvement must be regarded as only the beginning of the growth of oil geology. It must be recognized that that part of geology which relates to oil is a new science. It has no history covering centuries of systematic observations, chemical, crystallographic, mineralogical and metallurgical, running apace with the development of mining, as in the case with the geology of metals. It is largely unorganized."

E. De Golyer, vice president and general manager of the Amerada Petroleum Corporation, and a leading geologist, in an address before the American Petroleum Institute said it is only by constant refinement and improvement in technique that the geologist is able to be of use in the industry. "The limit of possible refinement and use of new methods has by no means been reached," he said. "Under any condition research for further improvements and new methods will be continued by geologists themselves and by individual companies. There are certain researches, however, which should be carried forward by the industry as a whole. Any single one of us may think the problem of the origin of oil for example is a matter of scientific or academic interest, and of no particular importance but the problem is a broad one—broad and fundamental enough to have an attempt at solution sponsored by the entire industry—and its solution could easily be of inestimable benefit to the industry. There are other problems of similar importance.

"Certain researches now being carried forward by individual companies might be more profitably and more successfully handled by the industry as a whole. . . . I realize a program for attempting the improvement of oil finding methods may not commend itself at the present time to an industry already harassed by overproduction, but a research is a matter of years rather than months and if results of research are to be available when they are most needed, work must be started in advance. There is no rational method of guiding the exploration for and of oil deposits except on the basis of geologic evidence. The business of searching for oil is a highly speculative one and there are certain risks incident to it which cannot yet be eliminated. The business of the geologist is to reduce those risks to a minimum."

Refining Problems

Returning to work being done on refinery problems and motor fuel researches, a survey would not be complete without mention of the work, much of which is necessarily carried on quietly, by private laboratories and consulting engineers and chemists. Important special work is being done by such concerns as A. D. Little & Company, of Cambridge, Mass.; Carleton Ellis Laboratories at Montclair, N. J.; Walter E. Loomis Company, Boston, Mass.; Thomas T. Gray Laboratories at Elizabeth, N. J.; and the Kansas City Testing Laboratory.

The advancement of scientific development is further emphasized by organization of separate de-

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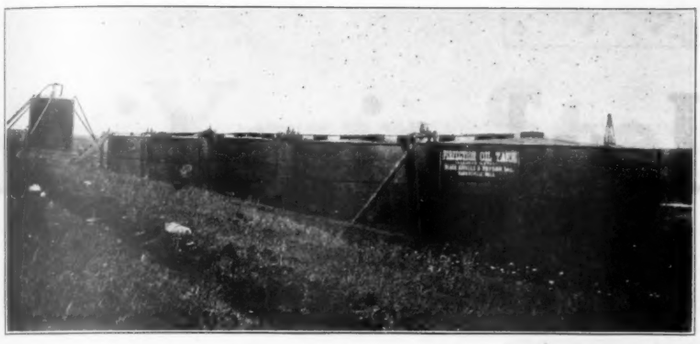
PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS



This Oklahoma producer with his battery of Perfection Vapor Pressure Tanks refuses to pay toll to evaporation

Evaporation will exact $189,000,000 this year from industry

Granting that about 600,000,000 barrels of light oil will be produced in the United States this year and taking the Bureau of Mines statement that 7½ per cent of the total crude production will be lost before the finished gasoline is shipped from the refinery, the volumetric evaporation will be 45,000,000 barrels of the cream of the gasoline, writes J. H. Wiggins of Bartlesville, Okla., in Mining and Metallurgy. This is a conservative figure and is equivalent to 1,890,000,000 gallons. The real value of this liquid is at least 150 per cent of the value of an equal volume of motor fuel. At only 10 cents per gallon, the loss is 189,000,000 dollars.—From THE OIL AND GAS JOURNAL, January 7, 1925.

Why Not Stop Your Share Of This Tremendous Loss?

WHY shiver when you think of your share of that tremendous 189 million dollar tax the oil industry is going to pay to evaporation?

For you are not obligated in the least to pay tribute to this thief. You won't have to mark down a big figure in your profit and loss column—a figure that will likely throw you into the "red."

That absolute protection of course is Perfection Vapor Pressure Tanks for lease storage. Made of best bolted steel obtainable, reinforced with stays and struts to provide extra strength, equipped with foolproof valves to maintain a constant even pressure over the crude, Perfection Vapor Pressure Tanks are the last word in all that could be desired in oil field equipment.

What will they cost you?

Not a cent, when you estimate the big saving effected. One of our customers claims his Perfections have paid for themselves several times a year.

Right now is a mighty good time to get in touch with one of our representatives. You will find them in every active field in the country.

Make a firm resolution that your crude will not be subjected to that 189 million dollar tax!

Black Sivalls & Bryson
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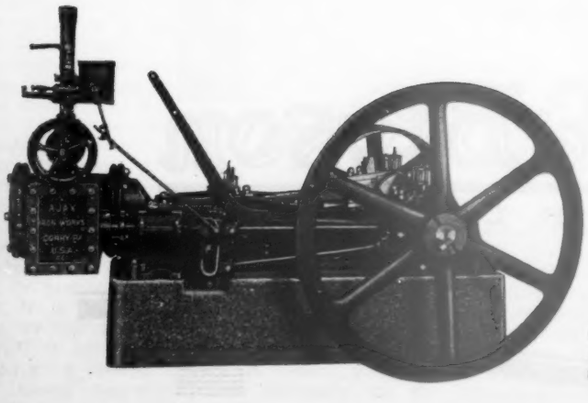

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Ajax-Carson Lubricators are on display at all branches of the National Supply Companies. Get one at your first opportunity.

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AJAX IRON WORKS, Corry, Pa.

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NATIONAL SUPPLY COMPANIES

in every oil field

ENGINES

The Ideal Ajax Twin, the engine that is imitated.

Standardization Work Done and Ahead

Status of the Work of the Various Committees Which Have Been Considering Recommendations. Specifications Completed

By Carl A. Young
Director Division of Standardization, American Petroleum Institute

The committees of the American Petroleum Institute engaged in standardization and an outline of what they have done and what is planned in the future, follows:

Special committee on the Standardization of Specifications for steel and iron pipe for oil country tubular goods:

J. Edgar Pew, vice president Sun Oil Co., Dallas, Texas; national chairman.

Capt. J. F. Lucey, Dallas, Texas; national vice chairman.

C. D. Watson, Carter Oil Co., Tulsa, Okla.; chairman Mid-Continent district subcommittee.

A. B. Steen, chief engineer, The Texas Co., Houston, Texas; chairman Texas district subcommittee.

Joseph B. Elam, 312 Sinclair Building, Shreveport, La.; chairman Arkansas-Louisiana district subcommittee.

John Tonkin, Peoples Gas Co., Pittsburg, Pa.; chairman eastern district subcommittee.

Chester W. Brown, Union Oil Co. of California, Los Angeles, Cal.; chairman of the standardization committee of the Chamber of Mines and Oils.

N. S. Wilson, Midwest Refining Co., Casper, Wyo.; chairman Rocky Mountain district subcommittee.

T. D. Davies, assistant to vice president, National Tube Co., Pittsburgh, Pa., chairman of the pipe manufacturers' subcommittee.

F. N. Speller, metallurgical engineer, National Tube Co., Pittsburgh, Pa.; chairman of subcommittee No. IX of Committee A-1 of the American Society of Testing Materials.

Status of work:

Specifications on the chemical and physical properties, as well as workmanship, finish and inspection, have been completed on all grades of oil country pipe. Complete tables on sizes, weights, threads, and gauges have been completed for A. P. I. casing. Complete tables on sizes, weights, threads, and gauges are now in course of preparation on drill pipe in conjunction with the Committee on Rotary Drilling Equipment; also on tubing, in conjunction with the Committee on Pumping equipment. These tables should be available for use some time during the present year.

Printed copies of Specification No. 5 are now available from the Institute offices in New York. Oil operators are urged to distribute these specifications among their field men and purchasing departments.

Cable Drilling Tool Joints

Special committee on the standardization of cable drilling tool joints:

John T. Kirby, manager Twenty-first Street Works, Oil Well Supply Co., Pittsburgh, Pa.; national chairman.

Status of work:

These specifications are completed, and printed copies (Specification No. 3) are now available at the institute offices in New York. Oil operators are urged to place copies of these specifications in the hands of their field men and purchasing departments.

The following manufacturers and oil companies have placed orders for A. P. I. reference master gauges to conform to these specifications, and cable tools with A. P. I. standard joints should soon be available in the various oil fields:

Oil Well Supply Co., Pittsburgh, Pa.; Lucey Manufacturing Corp., Chattanooga, Tenn.; Union Tool Co., Carnegie, Pa.; Hinderliter Tool Co., Tulsa, Okla.; Kesselman & Co., Parkersburg, W. Va.; Charles Phillips Tool Co., Mannington, W. Va.; Oklahoma Iron Works, Tulsa, Okla.; Acme Fishing Tool Co., Parkersburg, W. Va.; Asiatic Petroleum Co., (New York), Ltd.; New York City; Bovaird & Seyfang Mfg. Co., Bradford, Pa.; Crotty & Co., Parkersburg, W. Va.; Guiberson Corp., Dallas, Texas; International Petroleum Co., Ltd., Toronto, Canada; Leidecker Tool Co., Marietta, Ohio; McJunkin Supply Co., Charleston, W. Va.; Oil Well Engineering Co., New York City; Spang & Co., Butler, Pa.; Star Drilling Machine Co., Akron, Ohio; Louden Tool Co., Kittaning, Pa.; Sanderson Cyclone Drill Co., Orrville, Ohio; Masseth Packer & Machine Co., Butler, Pa.; Ohio Oil Co., Bridgeport, Ill.; South Penn Oil Co., Pittsburgh, Pa.; Bridgeport Machine Co., Wichita, Kans.; O. C. S. Manufacturing Co., Coffeyville, Kans.

Rig Irons

Special committee on the standardization of rig irons:

H. J. Lockhart, assistant to vice president, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; national chairman.

R. F. Hill, National Supply Co., Toledo, Ohio; national vice chairman.

H. C. Cooper, Hope Natural Gas Co., Pittsburgh; chairman eastern district subcommittee.

H. M. Ladd, Midwest Refining Co., Casper, Wyo.; chairman Rocky Mountain district subcommittee.

Homer T. Lamb, Red Bank Oil Co., Tulsa, Okla.; chairman Mid-Continent district subcommittee.

F. F. Hill, Union Oil Co., Los Angeles, Cal.; chairman California district subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oils.)

John H. Tucker, Gulf Production Co., Houston, Texas; chairman Texas district subcommittee.

Status of work:

The work of this committee is completed and the specification was adopted by the board of directors of the institute at Fort Worth on December 11, 1924. Printed copies of this specification are now in the course of publication and should be available for general distribution in the near future. Copies may be secured from the institute offices in New York. Oil operators are requested to distribute these specifications to their field men and purchasing departments for further study and use.

Rotary Equipment

Special committee on standardization of rotary drilling equipment:

Capt. J. F. Lucey, Dallas, Texas; national chairman.

Ernest Nicklos, The Texas Co., Tulsa, Okla.; national vice chairman and chairman of Mid-Continent (Oklahoma and Kansas) subcommittee.

W. W. Fondren, vice president Humble Oil & Refining Co., Houston, Texas; chairman of the Texas district subcommittee.

R. E. Allison, contractor, Shreveport, La.; chairman Arkansas-Louisiana subcommittee.

E. E. Greve, chief engineer, Oil Well Supply Co., Pittsburgh, Pa.; chairman engineering subcommittee, representing rotary drilling equipment manufacturers.

A. B. Steen, The Texas Co., Houston, Texas; chairman special subcommittee on slush pumps.

F. F. Hill, Union Oil Co., Los Angeles, Cal.; chairman California subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oil.)

Status of work:

This committee is practically ready to submit its report to the board of directors of the institute for approval. Final recommendations have been made on shafting and keyways, chain, sizes of line shafts, methods for designating sizes of sheaves, hoisting blocks, and D. S. drilling hooks. Final recommendations have been made on sizes of grief stems, as well as the upper and lower connections.

Tentative standards have been recommended on rotary drilling tool joints and taper joints for fishtail bits. Drill collars will be standardized in accordance with the final standards determined on tool joints and fishtail bits.

Oil Field Boilers

Special committee on the standardization of oil field boilers:

A. B. Steen, chief engineer, The Texas Co., Houston, Texas; national chairman.

D. F. Connolly, Kennedy Building, Tulsa, Okla.; national vice chairman.

W. V. Bowles, The Texas Co., Houston, Texas; chairman Texas district subcommittee.

Chairman for the California, Rocky Mountain, Mid-Continent, Louisiana and Arkansas and eastern districts will be appointed in the near future.

M. H. Broderick, the Broderick Co., Muncie, Ind.; chairman of the subcommittee of boiler manufacturers.

Status of work:

A complete survey has been made on the possibilities of standardizing oil field boilers, as follows: Standard method for computing horse power. Boilers of the same horse power should have the same size steam connections, boiler feed, blow-off, gauge cock, and water gauge connections; the same size bonnet, the same number and size of hand holes, and also a standard size manhole if used, center of steam domes located the same distance from front end of boiler and the distance to top of dome from bottom of fire box to be the same. It is hoped that final recommendations along these lines will be made by this committee some time in the middle of the present year.

Belting

Special committee on the standardization of belting:

National chairman to be appointed.

William Warr, Manhattan Rubber Co. Passaic, N. J.; national vice chairman.

J. A. Jones, Associated Oil Co., Los Angeles, Cal.; chairman California district subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oil.)

Chairmen for the other geographical districts will be appointed in the near future, as well as for proper subcommittee of the manufacturing interests.

Status of work:

This committee, under the chairmanship of R. D. Gwynne, Gypsy Oil Co., Tulsa, Okla., (since resigned on account

Condition of the Oil Business Is Better than for Several Years Past

By J. EDGAR PEW
President, American Petroleum Institute

I believe the condition of the oil business is better than it has been for several years.

Within the industry there is a better spirit of cooperation for the benefit of all. Standards of equipment are being established that should very considerably reduce the costs of materials and increase the efficiency of all field labor.

J. Edgar Pew

Drilling operations are conducted with better success as a result of geological data, largely developed within the past few years. New pools of oil are being discovered with greater frequency and with less of the wildcat type of operations than ever before.

The relations of the industry to the public are improving. The problems confronting the industry, its responsibilities and its great achievements, are being better understood. I believe the efforts of the American Petroleum Institute to still further promote a better understanding on the part of the public will accomplish much during the present year. The public is entitled to full confidence in the institute in this work. The institute should make any sacrifices necessary to establish this confidence.

I do not look with alarm upon any prophesies of a scarcity of oil during this year, or for any years to come. The oil industry has in a big way accomplished the seemingly impossible in the amount of oil it has produced, notwithstanding repeated predictions to the contrary that there was no such amount of oil to be had. I am confident that the precedent of its past performances will be fully maintained in the future for many years to come, and until science and invention shall have provided a good and sufficient substitute for oil products. This seems to me to be a safe presumption.

On the whole the future of the legitimate oil business looks very bright.

of his health) has done some very constructive work. Definite recommendations have been made for improving the quality of belts. Recommendations have also been made affecting other items of equipment to prolong the life of belts in the field.

The work of this committee has now reached the point where recommendations from other committees on equipment are necessary in order to carry on the work. It is expected that these recommendations will be available in the near future.

Rope

Special committee on the standardization of wire rope and Manila cordage:

C. C. Sharpenberg, assistant manager, Standard Oil Co. of California, Bakersfield, Cal.; national chairman.

H. J. Leschen, president, A. Leschen & Sons Rope Co., St. Louis; national vice chairman, and chairman of subcommittee of wire rope manufacturers.

S. W. Meals, president, Carnegie Natural Gas Co., Pittsburgh, Pa.; chairman eastern district subcommittee.

M. J. McLaughlin, assistant manager, Magnolia Petroleum Co., Dallas, Texas; chairman Texas district subcommittee.

M. J. Foley, superintendent Mutual Oil Co., Denver, Colo.; chairman Rocky Mountain district subcommittee.

Richard Sperry, General Petroleum Co., Los Angeles, Cal.; chairman California subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oil.)

E. D. Holcomb, Magnolia Petroleum Co., Shreveport, La.; chairman Arkansas-Louisiana district subcommittee.

Charles C. Brown, Marland Refining Co., Ponca City, Okla.; chairman Mid-Continent district subcommittee.

E. P. Campbell, Denver, Colo.; chairman, United States Bureau of Mines subcommittee. A committee of Manila cordage manufacturers is now in process of organization.

Status of work:

Complete tentative specifications have been drawn up, covering the manufacturing and use of wire lines and also on Manila cordage. These specifications will be circulated throughout the various committees and it is hoped the recommendations on these important items will be available about the middle of the year.

Rigs and Derricks

Special committee on the standardization of standard rigs and derricks:

W. W. Fondren, vice president, Humble Oil & Refining Co., Houston, Texas; national chairman.

A. M. Bowman, Humble Oil & Refining Co., Houston, Texas; secretary.

I. L. Neely, general manager, Empire Gas & Fuel Co., Wooster, Ohio; chairman eastern district subcommittee.

J. H. Tucker, general superintendent Gulf Production Co., Houston, Texas; chairman Texas district subcommittee.

S. R. Zagst, Shreveport, La.; chairman Arkansas-Louisiana district subcommittee.

J. J. Conry, general superintendent Carter Oil Co., Tulsa, Okla.; chairman Mid-Continent district subcommittee.

A. W. Peak, Midwest Refining Co., Casper, Wyo.; chairman Rocky Mountain district subcommittee.

J. J. Hern, Midway Oil Co., Los Angeles, Cal.; chairman California district subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oil.)

Harry M. Runkle, International Derrick & Equipment Co., Columbus, Ohio; chairman of steel derrick manufacturers subcommittee.

Status of work:

Several hundred questionnaires have been mailed by Mr. Fondren through various oil districts, for the purpose of analyzing this subject and to form the basis for future standardization. Standard heights of derricks, openings through the water table, sizes of bases, etc., are receiving the attention of this committee and definite recommendations will probably be available about the middle of the year.

Pumps and Engines

Special committee on the Standardization of pumping equipment and engines as applied to the production of oil:

A. V. Hoenig, Carter Oil Co., Parkersburg, W. Va.; national chairman and chairman eastern district subcommittee.

W. L. McLaine, General Petroleum Corp., Los Angeles, Cal.; national vice chairman and chairman California district subcommittee. (This committee functions under the standardization committee of the Chamber of Mines and Oil.)

John R. Suman, Rio Bravo Oil Co., Houston, Texas, chairman Texas district subcommittee.

Joseph B. Elam, secretary of the Arkansas and Louisiana division Midwest Oil & Gas Co., Shreveport, La.; chairman Arkansas-Louisiana district subcommittee.

Hollis B. Porter, engineer, Gypsy Oil Co., Tulsa, Okla.; chairman Mid-Continent district subcommittee.

Other district committees, as well as committees of necessary manufacturing interests will be appointed in the near future.

Status of work:

This committee is now in the process of organization. The standardization of the sizes, threads, etc. of tubing will be one of the first subjects considered. Standard connections on sucker rods, width of pulleys on engines for pumping service, and other items relating to pumping will receive the attention of this committee. It is hoped that definite recommendations on some of these subjects will be completed about the middle of the year.

Storage and Tanks

Special committee on the standardization of steel storage and production tanks:

This subject has just been designated for consideration. A national chairman, district chairman and committees will be appointed in the near future. There are, at the present time, no general specifications available for oil country use on this important subject. It is hoped that definite recommendations will be available from this committee about the middle of the year.

A special conference on the various committees of the American Petroleum Institute on standardization will be held in St. Louis, Mo., sometime in June of the present year, at which time it is hoped definite recommendations will be available from many of the committees just mentioned. Definite announcement will be made later.

MESSAGE TO PETROLEUM INDUSTRY ON PROGRESS OF STANDARDIZATION

By J. EDGAR PEW,
President American Petroleum Institute

I wish to make a brief report on the standardization program of the institute, of its need and what we hope to accomplish.

In a report on "Standardization, What It Is Doing for the Industry," I find the following:

Standardization is today the most important approach to greater industrial efficiency. The magnitude of the yearly savings to be made is almost incredible; they are to be measured, as Secretary Hoover has said, "in hundreds of millions and billions of dollars." Actual savings that are now being made in the automobile industry through organized standardization activities are estimated by the industry itself at $750,000,000 a year; it is these savings which have made the automobile generally available instead of its being only a luxury for the rich.

The oil industry is probably one of the greatest of the exaggerated examples of the lack of standardization, and of the resultant high cost of operations. This is particularly true of the producing branch of the industry. It is unnecessary to dwell at length on this condition before practical men of the industry, or to go into the details either as to its cause or its effect on the industry. The industry has for the past 65 years been primarily engaged in finding enough oil for the demands of the world. It has met a big problem in a big way. It has never yet failed in this, its first and greatest responsibility. From no production prior to 1859, to meeting a requirement of 2,000,000 bbls. per day in 1924, is an accomplishment of which we may well be proud; and this industry expects to go forward and continue to meet the ever-growing requirements for a product which civilization demands. No other single industry has done so much as oil to make possible the advances in manufacture and in commerce, and in many other things that make for our present civilization.

But our responsibility does not cease with providing this useful commodity. We owe to ourselves and to the consumer that we use a proper economy in production. Refining methods have met this requirement to a much greater extent than have those used in producing oil. It is in the oil fields that the deficiencies of operations are more apparent. Here is spent annually over $300,000,000 for equipment alone, including pipe, machinery of all kinds and miscellaneous supplies and tools. This item of expenditures is annually being increased as the demands for oil increase, and the deeper drilling is required. Much of this expenditure is necessary, but many millions of dollars of it can be avoided by a standardization and simplification of our materials and methods.

No concerted effort has heretofore been made by those engaged in the production of oil to arrive, first, at the best materials to use, and then to reduce to a standardization basis the material and machinery sold by the different manufacturers, or to provide conditions that these manufacturers can reduce to single types the machinery or supplies they make and know that they will meet conditions for all operators alike. From these conditions our operations are much more costly than they should be, causing both the operator and the supply companies to carry large investments in materials that would be otherwise unnecessary. The belt manufacturer has to provide different widths of belts for the same use, because the pulleys differ in width for the same service. The pulley and sprocket manufacturer has to provide for different sized shafts, different size key seats and, in case of the sprocket for different size chains, all doing the same work. One could go on indefinitely and enumerate instances of duplication of materials in use now that differ in some essential requiring additional warehouse and supply store stocks, which not only add to the cost of operations, but decrease the efficiency of operations. The field men frequently do not understand or appreciate these differences, and attempt to use material or parts which do not quite fit. The results are accidents or delays, and greater costs. These conditions should not exist in an industry of the magnitude of the oil business.

The American Petroleum Institute has undertaken the task of standardization, and can only succeed with the cooperation of all its members.

Some committees have been appointed and others are now being appointed, to cover this work, and it is expected that the entire field of production will be fully covered with these committees, with memberships in every important area of production in this country.

These committees will expect and appreciate your cooperation and suggestions at all times, and will, as the work advances, keep you advised of the progress of their work.

VETERAN IN REFINING DEAD

Henry Ackerman, aged 67 years, died at his home in Rouseville, Pa. He had been for 32 years in the employ of the Continental Refining Co.

INCREASING IMPORT OF SCIENCE TO OIL

(Continued from Page 134)

partments to handle such work on the part of some of the larger oil organizations. The Standard Oil Co. (New Jersey) has been particularly active in respect to technical research and development. The company has a development department which has three branches of activities which can be classified as research division, experimental division and inspection laboratory. Dr. C. O. Johns is director of the research division; Dr. N. E. Loomis, of the experimental division, and Dr. Ernest W. Dean is in charge of the inspection laboratory. The Standard Development Co., of which Frank A. Howard is president, and G. W. McKnight and C. A. Straw, vice presidents, handles patent matters and the licensing of processes. The latter company recently announced acquiring of an interest in the Leo Ranney process of oil recovery and will grant licenses under the Ranney patents. The Standard Oil Co. (New Jersey) also has a chemical production division, which markets by-products such as secondary alcohols, a new plant for the manufacture of these alcohols from petroleum gases was completed at the Bayway refinery last year and a similar plant was put in operation by the Empire Refineries at Okmulgee, Okla., by arrangement between the Standard Oil Co. (New Jersey) and H. L. Doherty & Co.

Last year the formation of the Ethyl Gasoline Corp., owned jointly by the Standard Oil Co. (New Jersey) and the General Motors Corp., was announced to handle the sale of ethyl fluid and this product was put on the market on commericial scale. Wide attention was attracted to it by an accident in the experimental plant of the New Jersey company at Bayway. The development of ethyl gasoline by the General Motors Chemical Co. is one of the outstanding research accomplishments of recent years. Sales last year were in the neighborhood of 100,000,000 gallons, according to Thomas C. Midgley, Jr., vice president of the chemical company and creator of ethyl fluid.

DAILY MOTOR MILEAGE AND GAS CONSUMPTION

Reports on gasoline consumption in July, when consumption was the highest ever recorded, indicated the enormous volume of traffic our highways are now carrying, according to the Bureau of Public Roads of the United States Department of Agriculture.

The Department of the Interior reports that the domestic demand for gasoline during July was 794,030,852 gallons. The bureau estimates that at least 85 per cent of this amount was used for motor vehicles, and since 15,552,077 vehicles were registered on July 1, the average daily consumption was 1.4 gallons per vehicle. Assuming that the average motor vehicle gets 14 miles per gallon of gasoline, the total daily mileage made by motor vehicles amounted to 300,000,000. In two days motor vehicles traveled a greater mileage than do all of the passenger trains in the United States in an entire year.

The improved roads already constructed must have saved motor vehicle owners millions of dollars in gasoline consumption alone, but just how much it is impossible to say.

Research conducted at Iowa State College, in cooperation with the bureau, indicates that where a gallon of gasoline is consumed on a poor road, only seven-tenths of a gallon will be required if a good surface is built. It is well known among highway officials that the greater proportion of traffic concentrates on a relatively small percentage of our roads, and it is these roads that have been and are being improved by the States and Federal Government.

With motor vehicles traveling 300,000,000 miles per day in the months of heaviest traffic it is a serious waste of money not to improve the main routes when every dollar of expenditure for gasoline on a bad road can be reduced to 70 cents on a good road, says the bureau.

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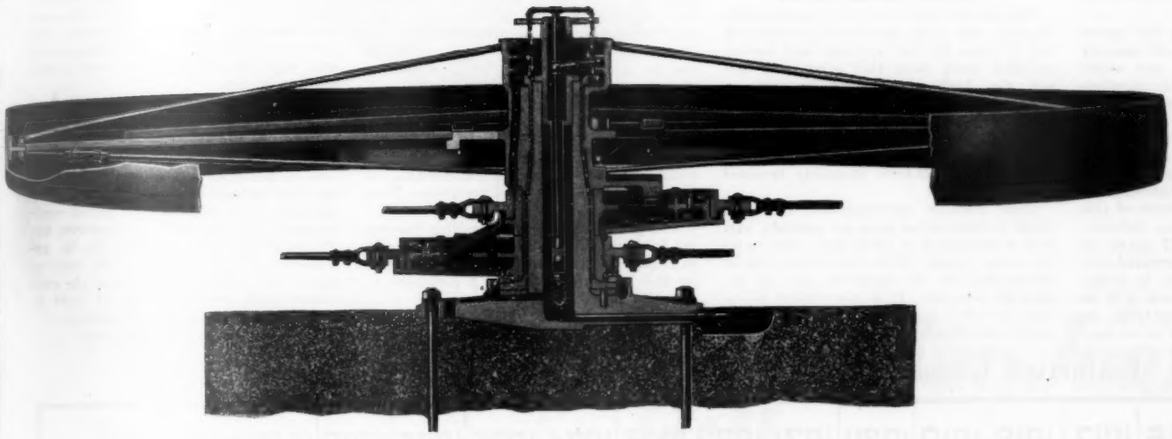
BAND WHEELS
16—18 or 24 FOOT

ECCENTRIC COMBINATIONS

18 inch Upper, 24 inch Lower
18 inch Upper, 18 inch Lower
24 inch Upper, 24 inch Lower

The NATIONAL SU

AL PUMPING POWER



Lubricated Power

ARROWS INDICATE COURSE OF OIL FLOWING TO ALL WORKING PARTS.

UPPLY COMPANIES

Standardization of Accounting Planned

American Petroleum Institute Working Out a Proposed Basis for Manual of Accounts for Adoption by Petroleum Companies

One of the most important developments occurring in the industry is that looking to the standardization of accounting, and during the coming year it is possible a manual of accounts will be completed and the oil companies will be adopting uniform methods in all their departments. This movement, which in other industries has proved of peculiar benefit, was initiated by M. W. Mattison, director of the division of taxation and accounting of the American Petroleum Institute. The proposed basis for the manual has been worked out and the industry is cooperating to give the benefit of thorough discussion to the matter before it takes final shape.

One feature of the work is the appreciation that accounting in the oil industry is peculiar to that business, and under the plan of bringing about standardization the industry is going to work out its own program. It is felt an agreement among the men selected on the general committee and on regional subcommittees on the best methods of accounting will receive the endorsement of the industry.

As in the case of any movement of this kind it is necessary that the industry lend its full cooperation. If plans at present outlined are finally approved and adopted by the oil companies, it means that oil company balance sheets will be uniform, with all reports comparable. At the present time there is little or no uniformity in the financial statements. This has been made basis for attack upon the industry on various occasions and as late as Senator LaFollette's oil report. It is probably not an exaggeration to state that unless the industry works out its own method it will eventually be compelled to by congressional action.

As stated, the American Petroleum Institute will undertake during the current year to devise a complete manual of accounts for all branches of the oil industry. It will not presume to do this important work independently but entirely through cooperation of the industry itself.

Uniform Method Needed

During the past two years considerable thought and study has been expended on the problem by the institute and having satisfied itself, first, that a uniform system was both needed and desirable, a group meeting of controllers and auditors representing the entire industry was held during the annual meeting at Fort Worth in December. The meeting was well attended and its objects favorably received and acted upon.

This meeting recommended that the work be started as soon as possible, and that a committee of 18 be appointed to do the actual work. This committee is to be designated by the institute and is regionally selected. It is the present intention to call a meeting of this committee within the coming month and have it organize and approve a program. It is intended to have group meetings of accountants from the industry meet in the various oil sections, and at these meetings the committee members representing the particular region where a meeting is held will assemble and correlate all valuable data presented, and when each section has been so served the whole committee will again assemble and from the data at hand a manual of accounts will be prepared. It is hoped this can be accomplished for submission to the next annual meeting of the American Petroleum Institute.

The manual will be available to the industry and for such use as the industry may dispose to make of it. Of course, only those who may improve their present system of accounts will make use of it and no one will use it who does not desire it.

The committee will consist of 18 members selected as follows:

California, 3 members; Rocky Mountains, 1 member; Oklahoma-Kansas, 3 members; Texas-Arkansas-Louisiana, 3 members; Appalachian, 4 members; New York, 4 members.

The personnel of this committee has not yet been announced but it will be as soon as replies are in hand to the letters issued by the institute designating members to serve.

When the committee is completed it will probably be called to meet in Chicago, and it is desired that this meeting be held not later than February 5.

A representative of the American Petroleum Institute will serve with the committee and all group meetings and will give the larger part of his time to this work during the year.

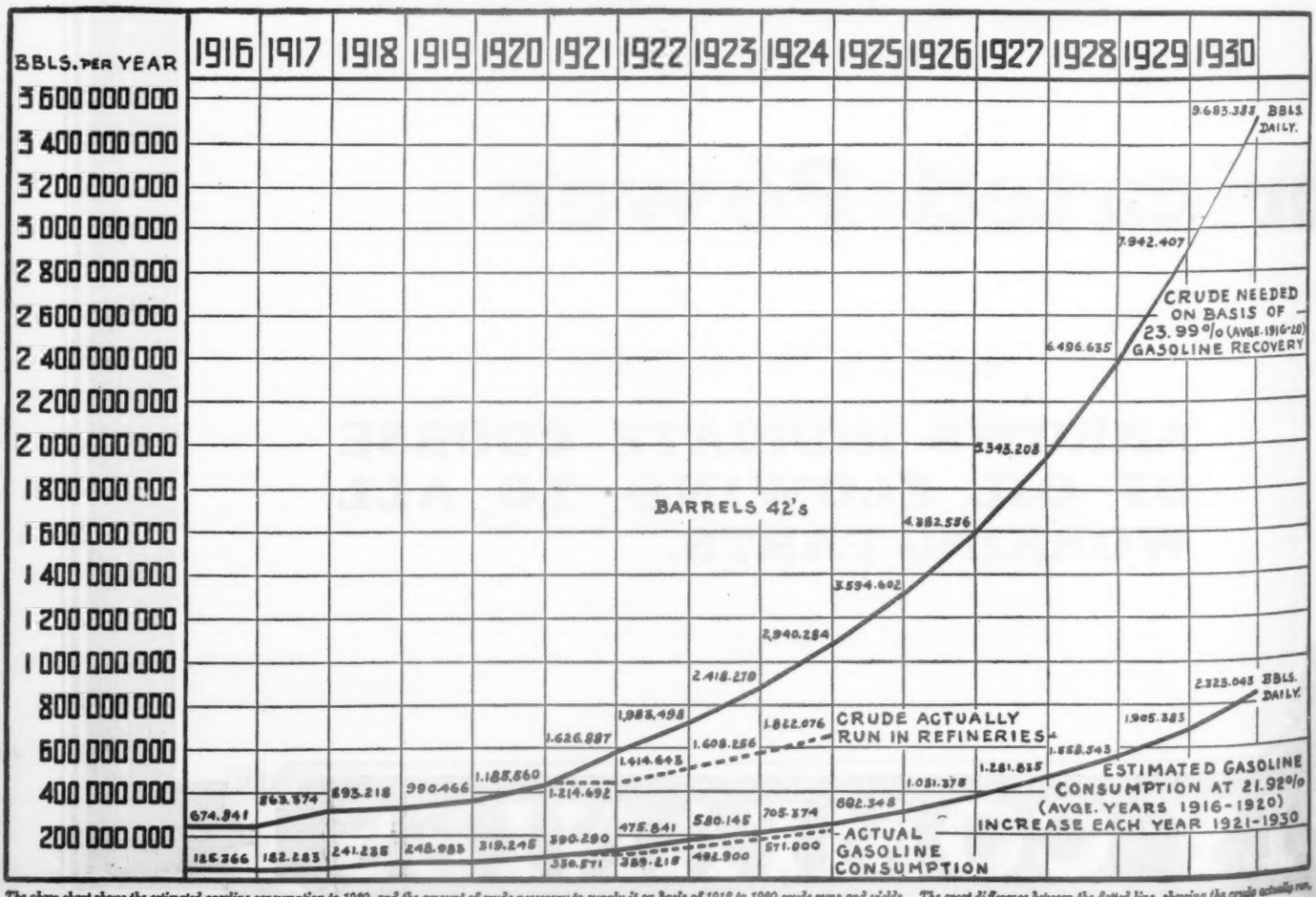
There are a great many questions involved in preparing a general manual of accounts for the industry as a whole, but it is thought by the American Petroleum Institute that much can be accomplished in the matter and that in the end all will benefit to some extent and none will lose by participation. The practical accountants in the industry are the men to do the work, in fact, they will do the work, and the American Petroleum Institute will serve as a forum for their deliberations and will, in addition, give such assistance as it can.

To Meet in Chicago

In accordance with the results passed by the group meeting at Fort Worth, nominations have been made of 18 auditors to serve on the committee to work out the manual of accounts. Acknowledgement and confirmations of all nominations have not yet been received, but all selections are expected to be announced formally shortly. As soon as these nominations are in hand the committee will be summoned to meet in Chicago to perfect its organization.

(Continued on Page 146)

Estimated Gasoline Consumption and Refinery Runs of Crude



The above chart shows the estimated gasoline consumption to 1930, and the amount of crude necessary to supply it on basis of 1916 to 1920 crude runs and yields. The great difference between the dotted line, showing the crude actually run, and the solid line, estimating the amount of crude needed, represents two factors, not considered important until after the year 1920, namely, absorption gasoline and gasoline made by cracking.

—Courtesy, The Lamp.

When Teddy Took San Juan Hill

Jones Sucker Rods were standard with oil men—and today, as then, Jones Rods lead the world in permanent, dependable quality.

The new forged End Rods—the Jones Giant and Jones Perfect, have been pronounced, after exhaustive comparative tests, to be the strongest, best Sucker Rods ever produced.

Get all the facts,—know why Jones Rods are better—let us show you where their use may save you many days of wearisome, costly delays and many dollars in added expense.

Catalog on request.

THE S. M. JONES COMPANY
Toledo, Ohio
Mid-Continent Office—601 Wright Bldg., Tulsa, Okla.

Jones forged-end Sucker Rods

Bureau of Mines Activities in 1924

Petroleum Research Embraced Production and Refining Studies of Great Value to Petroleum Industry. Interest in Conservation

By F. B. Tough
*Chief Petroleum Engineer, Bureau of Mines, Department of the Interior**

The Department of the Interior expends annually more than $500,000 in the petroleum work of the Bureau of Mines. Approximately half of this money is devoted to the business of looking out for the Government's interests in connection with its oil properties, or the oil properties of the Indian tribes for which the Interior Department acts as guardian. The other half is expended upon research and in campaign for conservation through prevention of waste. The bulk of the petroleum work for the Bureau of Mines is done outside of Washington. The Washington office is equivalent in our organization to the "New York office" of many oil companies.

The business of looking out for Government oil properties is established in the Rocky Mountain, Pacific Coast and Oklahoma districts. The headquarters for this work, which is commonly known in the department as the "leasing work," are in Denver. There also are nine branch offices scattered throughout the various districts from which oil is produced from Government or Indian-owned lands. Each office has a personnel appropriate to its needs. Engineers, gaugers, clerks, expert drillers and accountants are employed for this work, each functioning in his or her sphere so that the producing and gauging operations on these lands are conducted in an approved and workmanlike manner and that proper accounting is made of the oil and gas produced so that the Government shall be insured of the proper royalty return and its property rights as owner of these oil lands shall not be jeopardized. As a practical matter, a feeling of mutual interest has developed between the field men employed for this work and the operators throughout their districts. As a result of these cordial relations, the advice of our men is often asked in regard to operations on privately-owned lands. Our men appear to be always welcome at the camps of the various operators and during their visits they can often make suggestions leading to means of conservation that might otherwise have been resented as interference with respect to private property. By the system of close supervision established by the Bureau, unskilled operators who might obtain a Government lease are prevented from damaging good producing territory through carelessness or ignorance. Therefore, when a man takes a lease to operate a piece of Government oil land, he has a pretty fair idea as to the character of the work expected of him, and all possible assurance that neighbors on Government land will be held to a like degree of workmanship. It can be said without fear of contradiction that this supervision as practiced in the large public land areas, is considered as an asset rather than an hindrance by responsible producers of petroleum.

The accompanying summary of royalty sales from the public domain and naval petroleum reserves during 1924 does not include Indian lands.

Petroleum Research

The research half of our work covers a wide range of activities, a few of which will suffice to illustrate the work in hand. During 1924, the bureau has been actively engaged in promoting safety in the petroleum industry. Studies of accidents occurring in oil production work were made and the results were published in two very instructive reports. It was shown in one of these that about 30 per cent of the days lost on account of accidents in producing operations were from the machinery at wells, while something like 20 per cent were due to falls of persons, and 15 per cent from falling objects. The remaining 35 per cent of days lost by accident are divided into 12 causes, none of which accounts for more than 8 per cent of the total lost time. With these data as a basis, studies are in progress which should lead to a reduction in the number and seriousness of accidents incident to the production of oil and gas.

Safety cars were sent into the oil fields by the safety division of the bureau on various instruction tours, during which more than 500 employes in the producing, pipe line, and refining branches of the industry received first aid training.

F. B. TOUGH
Chief Petroleum Engineer of the Bureau of Mines

Three motion pictures relating to the oil industry were made under the supervision of the bureau in cooperation with various oil companies. Two of these films are devoted to the cause of safety in the oil industry while the third shows the building of a derrick and the more important operations of drilling and bringing in a rotary drilled oil well. These films are circulated through the oil country, as well as among universities and other educational institutions, and are found to be not only instructive but also instrumental in getting people to think about safety.

Production Studies

The work recently done by a group of engineers of this bureau in the Powell Field of Texas where water encroachment was serious, will serve as a good illustration of this type of research. This field had been drilled rapidly and little engineering information was available as to the producing sand or the position of water sands above or below it. After several months of painstaking studies, it was possible to determine the position of four breaks in the Woodbine sand from which the oil in this field is derived. These breaks were the key to cementing off the encroaching water by stages, thus recovering much oil otherwise lost. As a result of this work, the operators in the Powell Field have cemented something like 150 wells on their own initiative.

The results of their work are not yet available but the results of the pioneer work done on 35 wells in this field under the supervision of our engineers are of interest. One cannot expect universal success in work of this kind and there were some failures but the net results of the work may be summed up in this way: Cost of 35 repair jobs and engineering work of the bureau, $45,000; result of work: water production was reduced from 50,000 bbls. to 250 bbls. a day. Oil production increased from 800 bbls. to 6,000 bbls. of oil per day. The value of the increased production thus obtained is estimated at about $2,000,000. More important than the immediate monetary value is the fact that the operators in this district have undertaken and successfully prosecuted work of this nature by cooperation among themselves. It is anticipated that the results of these studies and demonstrations will be applied with great profit in the new Wortham Field of Texas.

Federal Specifications for Products

In view of the many refiners who manufacture high grade petroleum products, it would be impossible for the Government to purchase its oil requirements by specifying patented trade names without seeming to show partiality toward some companies and corresponding discrimination against others producing equally high grade products. The Government, therefore, sets up certain specifications which the oils to be bought are required to meet. Although the quantities of oil purchased by the Government are relatively small, compared to national consumption, the chief importance of such specification purchases lies in the fact that many States and cities as well as large private consumers of petroleum products, tend to buy according to Government specifications. It, therefore, behooves Uncle Sam to take great care in these specifications, not only to be sure of purchasing good products, but this very care does not operate to exclude good products. In an effort to obtain satisfactory specifications for Government oil purchases, an Interdepartmental Specifications Board was organized some years ago. The board is assisted by the advisory board composed of skillful refinery men and chemists from commercial work, representing various refining districts.

About two years ago representations were made to the Interdepartmental Specifications Committee to the effect that the California oil refiners, while able to turn out an engine oil that would meet class "C" specifications in all other respects, found that additional processing was necessary to bring their product within the prescribed limits of the demulsibility and acidity tests required by the Government. It was stated that this additional processing not only increased the cost of manufacturing but also decreased, in their estimation, the actual service value of the oil. If their contention could be substantiated, it would indicate that these two points in the specifications for Class "C" oils, designed to eliminate certain classes of oils known to be undesirable for internal combustion engines, has tended to exclude, at least so far as the California lubricants were concerned, certain desirable products.

In order to obtain accurate and authentic information in regard to these points, a cooperative investigation was undertaken between the Bureau of Mines and the American Petroleum Institute, representing the West Coast refiners. The cost of this study has been about $20,000, borne in equal proportions by the cooperative organizations. This work has required more than a year's careful dynamometer testing of the oils. In this investigation, the engine of the dynamometer set is really the yardstick with which the service values of the various oils are measured. Much valuable information has been obtained through this study which is now drawing to a close and I believe the report on this subject will be worth many times its cost, to the manufacturers and users of motor oils.

Separation of Distillates

The accurate separation of various petroleum products by distillation without excessive rerunning, is an everpresent problem in the refining of petroleum and large amounts of money are spent each year by the industry in research leading to improved methods. Two of the most important cuts are the separation of gasoline from kerosene and kerosene from gas oil. In plants with common fractionating equipment, a considerable percentage of fractions that could properly be included with gasoline without adversely affecting its quality, remain in the kerosene cut. It is not possible to obtain close cuts with ordinary distillation equipment without considerable overlap in the distillation ranges without frequent rerunning. Rerunning is expensive for several reasons. Each rerunning is accompanied by a refinery loss; increases the fuel consumption and decreases the throughput of the equipment. As a result it is often cheaper to get along with an imperfect separation than to engage in excessive rerunning.

Refinery engineers of the bureau undertook a study to determine the fundamentals of distillation throughout petroleum refineries in the country and also whether some of the methods used in the distillation of alcohol might be so modified as to be applicable to petroleum. After much study and observation, an extensive series of laboratory experiments were made and checked in fractionating column of the bubbling type. The most satisfactory results were obtained by vaporising as a whole all of the distillates to be separated from the crude after which they are separated by fractional condensation. Arrangements have been made for the in-

(Continued on Page 270)

SUMMARY OF ROYALTY VALUES FOR 1924

(December figures estimated on basis of November returns.)

	Oil	Gas	Gasoline	Totals
Outside Naval Reserves				
California	$800,000	$1,400	$5,600	$807,000
Colorado	29,300	.....	.....	29,300
Louisiana	220	.....	30	250
Montana	169,700	.....	.....	169,700
Wyoming	9,220,900	70,300	83,200	9,374,400
Total	$10,220,120	$71,700	$88,830	$10,380,650
Inside Naval Reserves				
California	$3,250,500	$114,300	$80,900	$3,445,700
Wyoming	203,700	7,500	.....	211,200
Total	$3,454,200	$121,800	$80,900	$3,656,900
All Government Lands (Including Naval Reserves)				
California	$4,050,500	$115,700	$86,500	$4,252,700
Colorado	29,300	.....	.....	29,300
Louisiana	220	.....	30	250
Montana	169,700	.....	.....	169,700
Wyoming	9,424,600	77,800	83,200	9,585,600
Total	$13,674,320	$193,500	$169,730	$14,037,550

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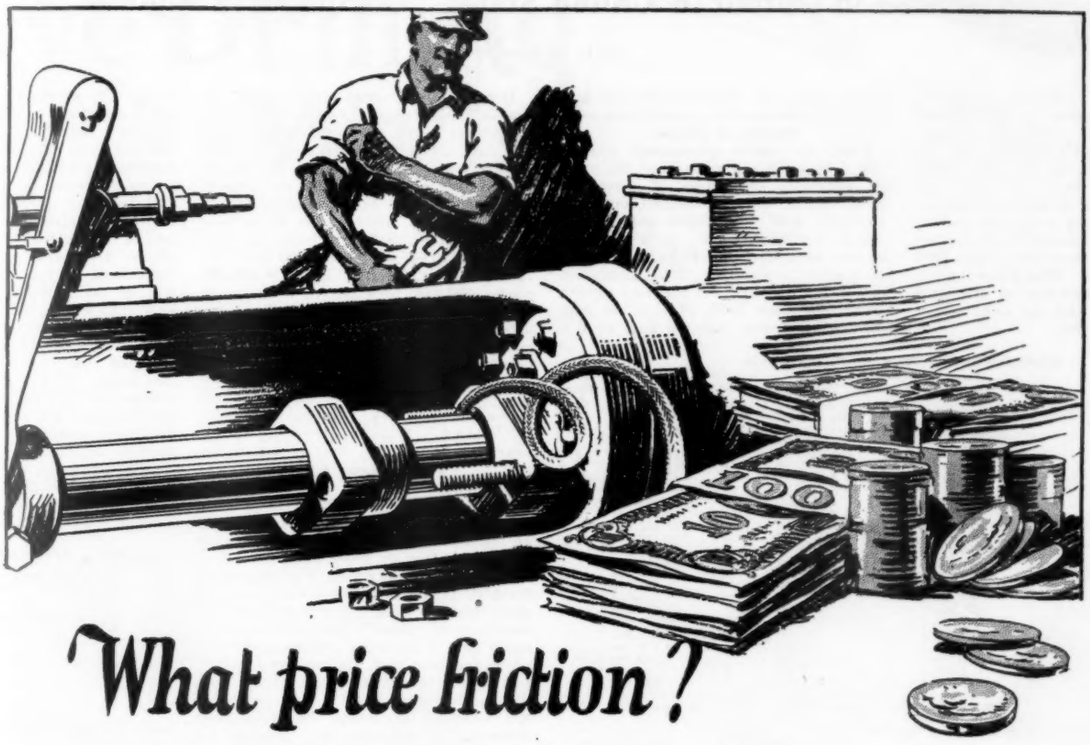

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The steel-like strength of Monel Metal in combination with its other unique properties gives it the length of life which makes for economical and trouble-proof pump operation.

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PUMP RODS

World's Production Declines in 1924

Drop of Almost 13,000,000 Bbls. First Since 1906, Due to Decrease in Output in United States. Comparative Figures

By L. M. Fanning

Estimated world production of petroleum in 1924 amounted to 1,005,915,000 bbls., compared with 1,018,900,000 bbls. in 1923, a decrease of 12,985,000 bbls., or 1.3 per cent. This is the first decline recorded since 1906. As in the case of the progressive increases in world production during the intervening years, the decline this year is due to United States production, which for the first time since 1906 showed an increase. The following table shows world production as estimated for 1924, for 1923, and the total output by countries since 1857.

WORLD PRODUCTION OF PETROLEUM

	*1924 Barrels	Pct. of Total	†1923 Barrels	Pct. of Total	1857-1923 Barrels	Pct. of Total
United States	717,000,000	71.2	732,407,000	71.9	7,908,989,000	63.1
Mexico	140,000,000	13.9	149,585,000	14.7	1,201,734,000	9.7
Russia	44,000,000	4.3	39,156,000	3.8	2,051,837,000	16.5
Persia	32,000,000	3.2	28,793,000	2.8	150,712,000	1.2
Dutch East Indies	15,000,000	1.5	19,868,000	1.9	288,555,000	2.3
Rumania	13,000,000	1.3	10,867,000	1.1	207,539,000	1.7
Venezuela	8,200,000	.8	4,059,000	.4	17,228,000	
India	7,500,000	.7	8,320,000	.8	156,544,000	
Peru	6,500,000	.6	5,699,000	.6	51,009,000	
Poland (Galicia)	6,000,000	.6	5,373,000	.5	190,947,000	
Sarawak (British Borneo)	4,500,000	.4	3,940,000	.4	16,842,000	
Argentina	4,000,000	.3	3,400,000	.3	19,752,000	
Trinidad	3,750,000	.3	3,051,000	.3	22,957,000	
Japan and Formosa	1,500,000	.1	1,789,000	.2	49,165,000	
Egypt	1,000,000	.1	1,054,000	.1	11,636,000	5.5
Colombia	600,000		424,000		1,347,000	
France	500,000		402,000		2,341,000	
Germany	350,000		312,000		16,649,000	
Canada	175,000		170,000		25,575,000	
Czechoslovakia	100,000	.4	74,000	.2	505,000	
Italy	30,000		34,000		1,171,000	
Algeria	9,000		9,000		68,000	
England	1,000		1,000			
Others	200,000		112,000		889,000	
Total	1,005,915,000	100.0	1,018,900,000	100.0	12,394,541,000	100.0

*Estimated. †U. S. Geological Survey figures.

The outstanding feature of world production in 1924 was the continued condition of oversupply in the United States, despite the falling off in total output. The effect of this was notable in many foreign producing countries, whose output could have been much larger but whose operations were restricted because of market conditions. This is particularly true of the Persian fields, and is also true of some of the South American producing countries, notably Peru.

Despite this condition, old European fields showed a tendency to revive. Rumania's production in 1924 lacked only 500,000 bbls. of equaling its high record of 13,500,000 bbls. in 1913. Russia is struggling back and becoming more of a factor in European markets. So far as the outlook for 1925 is concerned it is apparent that any falling off in American production and a strengthening of the markets, will mean substantial increase in production of existing European and Asiatic fields.

Venezuela Most Important

Probably the most important development in 1924 was the work done in Venezuela and the doubling of the production of that country. Much of the work is still of an exploratory nature but proved territory and existing wells and drilling operations point to a large increase in Venezuelan production this year.

The United States Geological Survey's estimate of production in the United States for 1924, which is given above, shows a total of 717,000,000 bbls., compared with 732,407,000 bbls. in 1923, a decrease of 2 per cent. The survey estimates that approximately 710,000,000 bbls. were transported from producing properties, and, allowing 7,000,000 bbls. for fuel consumed and changes in producers' stocks, a total of 717,000,000 bbls. is indicated for the year.

The United States continued in 1924 its dominance of world production. The total production for this country amounted to 71.2 per cent of aggregate world output, compared wtih 71.9 per cent in 1923. Of the total world's recorded production since 1857 amounting to 12,394,541,000 bbls., the United States has supplied 7,908,989,000 bbls., or 63.1 per cent.

Decline in Mexico

Based on official government production figures for ten months of the year, the estimated production of petroleum in Mexico in 1924 is 140,000,000 bbls., compared with 149,585,000 bbls., a decrease of 9,585,000 bbls., or 6 per cent. Mexico accounted for 13.9 per cent of the world's production in 1924, as against 14.7 per cent in 1923. Of the total world's production since 1857, Mexico has supplied 9.7 per cent, and the bulk of this production has come in the last ten years. Mexico's record year was 1921, when it produced 193,398,000 bbls.

The outstanding feature of Mexican production is the decline in so-called light crude oil produced and the increase in heavy oil, which has occurred in the last two years. It is estimated that of the total production of 140,000,000 bbls. in 1924, 35,500,000 bbls., or 25 per cent, were light oil and 104,500,000 bbls., or 75 per cent, were heavy oil. In 1922, of the total production of 182,266,00 bbls., 136,505,000 bbls., or 75 per cent, were light oil, and 45,761,000 bbls. were heavy oil. The change in the volume of light and heavy crudes in the last three years is shown in the following table:

	Light Bbls.	Heavy Bbls.	Total Bbls.
1924	35,500,000	104,500,000	140,000,000
1923	61,043,000	88,542,000	149,585,000
1922	136,505,000	45,761,000	182,266,000

Mexian crude oil production by months classified by light and heavy as given by government authorities is shown for 1924 with comparison with 1923 in the following table, the figures covering through October:

MEXICAN CRUDE OIL PRODUCTION
(Figures in barrels.)

	Light Oil 1924	Light Oil 1923	Heavy Oil 1924	Heavy Oil 1923	Total Production 1924	Total Production 1923
Jan.	2,451,000	6,835,000	9,342,000	5,369,000	11,793,000	12,204,000
Feb.	3,548,000	5,959,000	9,500,000	5,196,000	13,048,000	11,155,000
Mar.	3,934,000	6,064,000	9,780,000	5,993,000	13,714,000	12,057,000
April	2,900,000	5,323,000	9,599,000	6,419,000	12,499,000	11,742,000
May	3,147,000	5,064,000	8,835,000	7,546,000	11,982,000	12,610,000
June	3,148,000	4,649,000	7,803,000	8,075,000	10,951,000	12,724,000
July	3,424,000	4,831,000	7,878,000	8,059,000	11,302,000	12,890,000
August	3,023,000	4,718,000	7,878,000	8,526,000	11,301,000	13,244,000
September	2,389,000	4,045,000	7,645,000	7,664,000	10,034,000	11,709,000
October	3,881,000	4,629,000	7,176,000	7,893,000	11,057,000	12,522,000

Russian Increase

On the basis of complete official Russian production figures covering the first half of 1924 and incomplete official figures for later months, the estimated petroleum production of Russia in 1924 is 44,000,000 bbls., compared with 39,156,000 bbls. in 1923, an increase of 13 per cent. Russia produced 4.3 per cent of the world's output in 1924, compared with 3.8 per cent in 1923. Since 1863, when production of Russia was first recorded, it has produced 2,051,837,000 bbls., or 16.5 per cent of total world output.

Despite the gradual gains made by Russia in the last few years, the country is still far under the production of prewar days, when the annual rate for years ran between 70,000,000 and 80,000,000 bbls. Soviet authorities point to gains in the four years of Soviet control ending with October 1, 1924, citing Baku production at 150,018,000 poods for the year 1920-21; 179,808,000 poods, 192-22; 212,763,000 poods, 1922-23, and 258,682,000 poods, 1923-24 (one barrel is equal to eight and one-third poods). Official figures for production for the first six months of 1924 follows (in thousands of poods):

	Baku	Grosny	Other	Total
January	21,670	8,014	1,019	30,703
February	20,570	6,874	1,126	28,570
March	21,766	7,206	979	29,951
April	20,665	6,715	967	28,347
May	21,513	6,946	1,001	29,460
June	21,656	7,947	950	30,553

Persia Shows Gain

Production of crude oil in Persia in 1924 is estimated at 32,000,000 bbls., compared with 28,793,000 bbls. in 1923, an increase of 11 per cent. Persia, which only in the last six years has been a factor in world production, has accounted for 150,712,000 bbls. since first recorded production, or only 1.2 per cent of the world's total output. Regarded as potentially one of the most prolific petroleum producing countries, its commercial output at present is controlled entirely by the Anglo-Persian Oil Co. According to Sir Charles Greenway, chairman, the company is producing at the rate of 4,500,000 tons (33,750,000 bbls.), which represents the maximum amount the company is able to dispose of under present market conditions. He stated, however, that were the company to tap all the wells already opened up it could at once bring its production up to 10,000,000 tons (75,000,000 bbls.) per annum, or more, and that by drilling in the wells which have already been carried down to cap rock it could still further largely augment its production within a few months: Anglo-Persian production for fiscal years is given by Sir Charles as follows:

1918-19	1,106,415
1919-20	1,385,301
1920-21	1,743,557
1921-22	2,327,221
1922-23	2,959,028
*1923-24	4,250,000

*Estimated between 4,250,000 and 4,500,000 tons. One ton equals approximately 7.5 bbls.

Rumania Near Pre-War Rate

The most important development in Rumania was the passage of a new mining law which evoked protest on the part of foreign companies and foreign governments because of its alleged confiscatory features. Despite the furore created by this document, Rumanian production showed a good gain, and approached its pre-war level. Production in 1924 is estimated at 13,000,000 bbls., compared with 10,867,000 bbls. in 1923, an increase of 2,133,000 bbls., or 19 per cent. Rumanian output amounted to 1.3 per cent of the world production in 1924, compared with 1.1 per cent in 1923. Listed as the first producing oil country in the world, Rumania has supplied 207,539,000 bbls. since 1857, or 1.7 per cent of the world's total.

Among the South American producing countries, Venezuela recorded the greatest gain in production in 1924. Its output is estimated at 8,200,000 bbls., against 4,059,000 bbls. in 1923, an increase of 102 per cent. Practically all the large American producing companies are now active in Venezuela, and results in 1925 will doubtless establish Venezuela's place in world production. Operations in Colombia are going forward, particularly on the De Mares concession of the International Petroleum Co., but Colombia will be not a factor in the world markets until a pipe line is constructed from present proven territory. A survey for such a line has been made and it is expected that pipe will be ordered early this year. In Peru, where most of the production is also in the hands of the International Petroleum Co., output has been held down because of the overproduction in this country. Production in 1924 is estimated at 6,500,000 bbls., compared with 5,699,000 bbls. in 1923, with every indication that 1925 will see a production of around 7,750,000 bbls.

STANDARDIZATION OF ACCOUNTING PLANNED

(Continued from Page 142)

In many industries much progress has been made along the lines suggested for the oil industry, and there seems to be no reason why similar progress cannot be made for and by the oil industry. Among trade associations which have devoted considerable attention to this matter are the National Association of Chair Manufacturers, Cost Association of the Paper Industry, Refractories Manufacturers Association and Paint Manufacturers Association of the United States.

The Department of Commerce has fostered the movement as one of the most important questions before the industry today. In its book on Trade Association Activities, the department devotes a chapter to cost accounting which says that very early in the history of the trade association movement it was found that if the study of costs was to be of any value to the industry such costs would have to be ascertained upon a basis uniform so far as general classification and principles are concerned. Otherwise the results could not be comparable and would therefore be valueless. The aim is that statistics and reports emanating from the system shall be all-inclusive and of uniform composition so as to be comparable. The extent to which the details of methods are developed in the systems differs with every single association or industry.

Systematic Cost Accounting

"The establishment of systematic cost accounting methods within an industry or trade has many outstanding merits of value to the industry or trade as a whole." the report continues. "Some benefits are naturally more or less intangible and not directly visible, yet nevertheless real. A scientific cost accounting system properly applied raises the entire tone of an industrial or commercial group through promoting intelligent competition, increasing comparative efficiency, and making it possible for the individual units to establish better credit standings, which in turn attract trade to the group. Similarly a cost system is instrumental in improving quality and systematizing and stimulating production or distribution through checking variations from standard practice and helping in the control of overhead. Perhaps an outstanding advantage is its aid in making income and other tax returns."

Water *for* Five Drilling Wells

NOVO POWER

RED BANK OIL COMPANY
TULSA, OKLA.
July 11th, 1924.
Novo Engine Company.
Lansing, Mich
Gentlemen -
I have your request relative to Novo equipment. In reference to this I wish to advise that we have in use on our lease in 20-23-8, Osage County, Oklahoma, two No 91, type U Novo pumping outfits. These outfits have been in use for two years and furnish water for five drilling wells, pumping the water for a distance of three miles through a two inch line and there was never a time when we did not have an excess supply of water
All together we have about 8 of your outfits being used to furnish present time, one of these outfits was brought in 9 miles water for the wildcat well which we brought in from three to four thousand north and west of Independence, Kansas, in Montgomery County, July 2nd. This well came in at the remarkably shallow depth of 1642 feet and is now making a day at the SW corner of the SE of 28-32-14. I am herewith enclosing a picture of the pump barrels a day at the Coleman in the
used to furnish water for this well
We have used Novo pumping outfits for the past 6 years and they have given us the best of satisfaction
Very truly yours,
Homer T. Lamb
President.

Novo Type U Pumping Outfit

NOVO'S ability to do more than is expected is well told in the letter above from Mr. Homer T. Lamb, President, Red Bank Oil Co., Tulsa, Okla.

Novo's superiority is emphasized by the fact that the Red Bank Oil Co. are using eight Novo Type U, single cylinder, double acting pressure pumps.

Novo's Reliability is proven by the fact that for six years Novo has given the Red Bank Oil Co. "the best of satisfaction."

♦ ♦ ♦

Water for five drilling wells! Perhaps you need a pump that will do for you what Novo did for the Red Bank Oil Co.

We will gladly supply more information.

NOVO ENGINE CO.
Clarence E. Bement, Vice-Pres. & Gen. Mgr.
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Cable Address "NOVO LANSING"
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Keeps Operations Moving

ENGINES
Single Cylinder, 1½-10 H.P. (frost proof)—two cylinder, 6-12 H.P.—four cylinder, 12-40 H.P.

HOISTS
Single and double drum—one and two speed and reversible, portable heavy duty types—powered with Novo Engines

NOVO POWER

PUMPS
Open and closed top diaphragm—centrifugal—deep well—single, duplex double acting and triplex pressure pumps.

COMPRESSORS
Three sizes up to 170 cubic feet—with steel housings—mounted on trucks. Combination hoists and compressors

Investigations of Heat and Power Oils

Important Research Work Being Done by the United States Bureau of Standards Handicapped by Lack of Financial Support

By Charles E. Kern

WASHINGTON, D. C., Jan. 26.—The work of the United States Bureau of Standards during 1924 included investigations of heat and power oils, nautral gas and motor testing work, much of which was a continuation of programs for original research brought over from the previous year. Like other branches of scientific work being conducted by the Government in Washington larger financial resources would have opened up many investigations the importance of which is agreed upon. This, like all other bureaus of the kind, has been obliged to limit its performance rather than in accordance with the best judgment of investigtors who are constantly endeavoring to reach out beyond the present limit of knowledge and into that great field of the unknown where only careful, long continued and sometimes expensive work can accomplish results.

One of the astonishing facts in respect to the activities of the Bureau of Standards is that Americans desiring scientific work of testing such as the personnel of the bureau is eminently competent to perform are obliged to send their problems across seas to European countries where they pay for the services of foreign organizations. This results solely from the fact that the Bureau of Standards is not sufficiently equipped to handle the testing work that American business interests desire to have performed. All such work is paid for by the business interests seeking it at a price that not only covers the expense but actually yields a revenue to the Government. Men whose knowledge of the demand that is being made upon the bureau, or would be made if it were known that facilities exist here for performing tests desired, do not hesitate to assert that if the facilities of the bureau were quadrupled in physical apparatus and in trained personnel the entire plant would be kept busily occupied. Somewhat like the Patent Office, the Bureau of Standards is largely self-maintaining but it cannot be held out to obtain work unless facilities are provided. In other words, the initial cost of establishing plant and personnel must be provided by Government, but the cost of operation is to a considerable extent paid for by those who send in their problems for solution.

The bureau during the last year, has devoted considerable attention to fuels for internal combustion engines, the investigations being conducted in cooperation with the American Petroleum Institute, the National Automobile Chamber of Commerce and the Society of Automotive Engineers, these activities having been continued from the previous year.

Crankcase Dilution

The original aim of this investigation was the evalution of the effect of certain changes in fuel volatility upon car performance. As the investigation progressed, it became evident the greatest obstacle to the use of fuel of low volatility was the high rate of crankcase oil dilution which their use entailed. Hence recent efforts have been concentrated on an investigation of the factors influencing crankcase oil dilution. The influence of the temperature of the jacket water has been shown to be a major one, this influence apparently being due to the effec of a change in the temperature of the cylinder wall oil film on the rate at which diluent is added to or eliminated from it. The higher oil film temperatures tend to lower the rate of dilution.

The phenomena of combustion has received continued investigation, this work relating to factors of fundamental importance as regards the rates of explosive gaseous reactions. The practical end in view in this investigation is a better knowledge of the reactions under the conditions imposed by internal combustion engines. By the simple device of confining the gas in a soap bubble as a constant pressure bomb these reactions are permitted to run their course under constant conditions. In spite of the extreme quickness of the explosive action the entire progressive record is secured automatically by photographic means. This method not only permits the determination of the flame movement in space but it also permits the determination of the rate of the flame movement relative to the unburned components whose transformation it is affecting. When this value was secured it was found that the linear rate of the flame advance relative to the unburned components was proportional to the product of the concentrations (partial pressures) of the active components.

The effect of pressure upon concentrations and hence upon the reaction and flame velocity has never been determined. The device referred to seems particularly well suited for such determinations since it automatically adapts itself to the pressure which surrounds it. Hence a large constant volume bomb to contain this device has been constructed which will make it possible to follow the explosion reaction at pressures much below, as well as much above, atmospheric.

The use of high compression engines is predicated upon the availability of suitable fuels. That quality of fuel which renders it suitable for use in high compression engines is its resistance to preignition and detonation. During the year especial attention has been given to certain special fuels derived from gasoline by processes which alter the chracteristics of the fuel in these respects. Reports covering this work have been made to the Bureau of Aeronautics at whose request the work was done. This information together with data obtained in previous years with other fuels, has been embodied in a report which in the near future will be submitted to the National Advisory Committee for Aeronautics by whom this general investigation has been supported for several years.

One fact which has been made very evident by the year's work is that the relative merits of fuels as regards their resistance to detonation may be very different from their relative merits as regards their resistance to preignition.

Dewpoints of fuel air mixtures have been investigated and apparatus for determining the minimum temperature necessary has been developed.

Fuel atomization in carburetors, distribution of fuel versus engine performance and service tests of automotive lubricants have all received attention during the year.

The service tests have been conducted in cooperation with commercial organizations which have permitted a representative of the bureau to keep records of the performance of their truck units and which, in some instances, have used special oils at the request of the bureau. In most cases it has not been feasible to keep a sufficiently close record of the service of these units to justify conclusions as to the merits of the various lubricants employed. It has, however, been possible to increase the information available as to conditions to which an oil is subjected in service and the problems which confront the oil user.

Engine tests of lubricants, the consistency of greases, the measurement of crankcase oil dilution, the thermostatic bath for Saybolt Viscometer, and the standardization of viscometers have all received attention. Two viscometers, Saybolt Universal for lubricating oils and the Saybolt Furol for fuel oils have received attention and the accuracy of standardization of these instruments has been increased and the standard made more permanent by the adoption of master tubes kept at the Bureau of Standards.

Fluidity of Oils

Measurement of plasticity, investigation of bearing friction, fluidity of oils at low temperatures, gear transmission lubricants, airflow through radiators in fight, airplane radiators, development of instruments for measuring airflow through confined spaces, and automobile brake linings, each has been the subject of study.

Many tests have been made of automobile brake linings which work has been supported by the Motor Transport Division, Quartermaster Corps, United States Army. This work was begun about three years ago and many routine tests have been made at the request of various departments of the Government on samples of new materials submitted by manufacturers and test methods have been further developed. The close cooperation maintained with the associations representing the interested industries has resulted in further notable improvements in brake linings as evidenced by the materials submitted to the bureau for tests.

The last year has witnessed a nation wide awakening to the importance of adequate braking systems and the testing of automobile braking systems has formed an important part of the bureau's work.

Gas Meter Standards

Two closely related investigations relating to standards for large gas meters and developments of methods for testing them have been conducted by the bureau. The value of this work arises from the rapid increase of industrial uses of gas with demands varying from a few hundred to a few million cubic feet per hour. There are many gas companies who buy more or less of their gas supply for distribution and resell to their industrial and domestic consumers. If one of the meters through which this gas is measured is in error by one-half per cent and the price of gas wholesale is 50 cents per 1,000 feet the inaccuracy of the meter would represent $2.50 per 1,000,000 feet and where from 10,000,000 to 20,000,000 or more millions of feet are passed daily the loss becomes important. This statement indicates the great value of accurate meter determination.

It would be impossible in limited space to refer to all of the investigations that have been touched upon by the Bureau of Standards during the year, but heat and power oils, lubricants, natural gas and motors have undoubtedly received attention that makes a marked advance in knowledge on these subjects. It is a regrettable fact that, like the Geologi-

(Continued on Page 274)

Mutual Tolerance and Cooperation Needed for Constructive Effort

By WILLIAM N. DAVIS

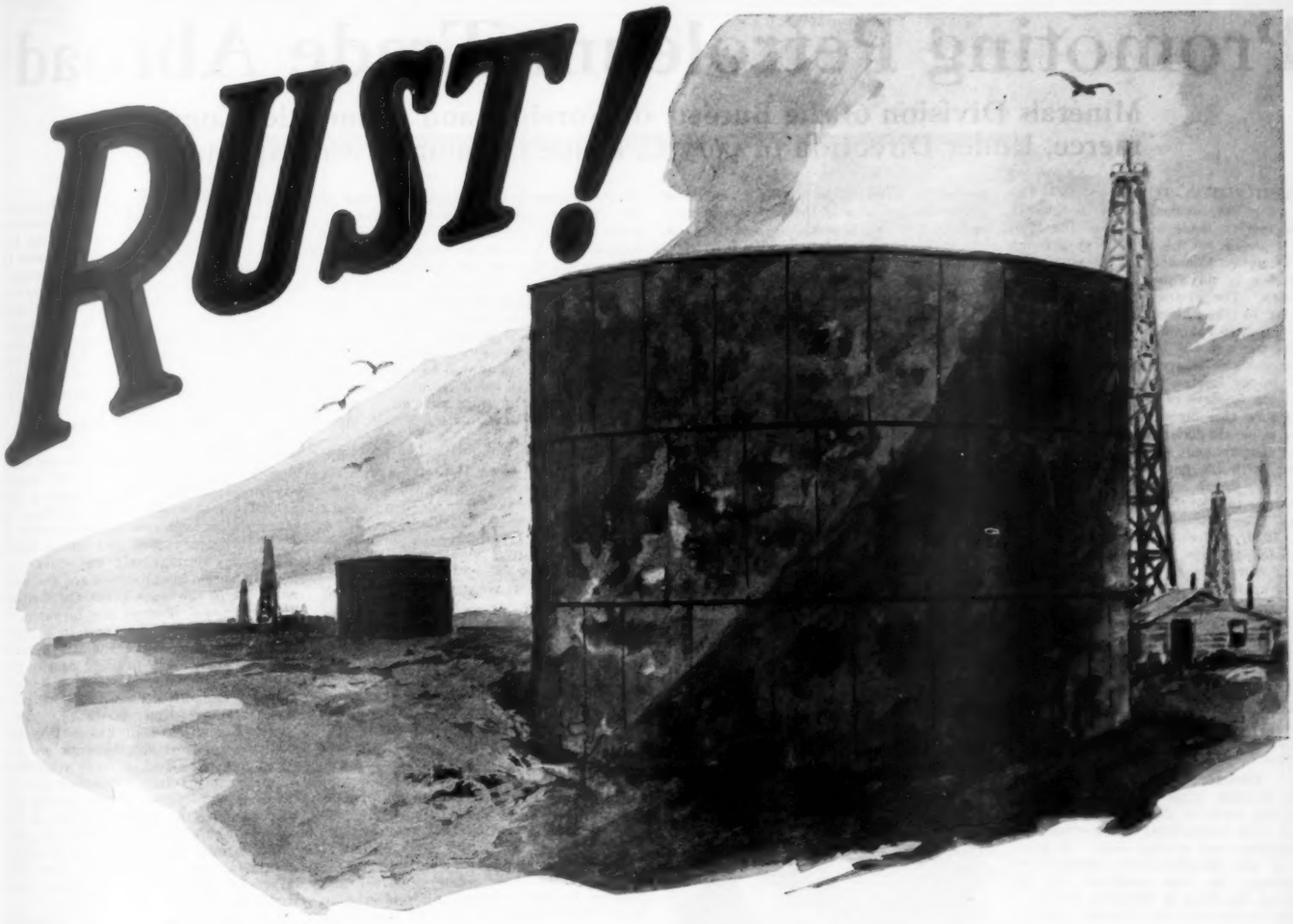
President, Mid-Continent Oil and Gas Association

Most of us in the oil industry are thinking in terms of the past. We have not comprehended the evolution which has occurred, nor awakened to the realization that the industry has outgrown its swaddling clothes and come to man's—nay—a giant's estate; that no arbitrary power within or without the industry is strong enough to shield it from the consequences of its own acts—to exempt it from the ruthless and relentless workings of economic laws; that, with modern means of transportation and communication, business policies must be based on nation or world-wide rather than local surveys of the industry's economic conditions; that all of its branches are inter-dependent and none can long prosper at the expense of others; that, for its conduct and welfare, every individual member has his share of responsibility, great or small according to his position and influence.

W. N. Davis

With the awakening of the entire industry to these facts would come that better understanding of each other, and that spirit of mutual tolerance and cooperation essential to any intelligent and constructive effort to solve those inherent economic problems peculiar to our industry; such as the uncertainty of finding a constant production equal to the current consumption of the raw material coupled with the inability to control its floods when found.

I would also remind the industry at this beginning of a new year that its various troubles spring in the first instance from overproduction both of crude and its refined products.



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CONTINENTAL

Promoting Petroleum Trade Abroad

Minerals Division of the Bureau of Foreign and Domestic Commerce, Under Direction of Guy C. Riddell, Valuable to Exporters

WASHINGTON, D. C., Jan. 19.—The past year has marked a steady growth in the foreign trade activity of the Minerals Division of the Bureau of Foreign and Domestic Commerce, Department of Commerce, in the promotion of petroleum interests. The giving of information of interest to the American exporter has been its chief function and in the doing of this work it has been open-minded to the suggestions of everyone having an interest in the foreign trade. However, all petroleum matters of the department are handled by this division.

The minerals division handles the work of the Department of Commerce in its contact with the petroleum, mineral and nonferrous metal industries, especially in relation to the development of the foreign trade. The division was organized in July, 1924, under the direction of Guy C. Riddell as chief, for coordinating and making more effective the work formerly carried on by the petroleum division and the minerals section of the iron and steel division.

The work of the division in its relation to the American petroleum industry is of particular interest at present, because of the appointment of Mr. Riddell as the representative of the Department of Commerce on the technical advisory committee to the Federal Oil Conservation Board.

Director of the Bureau

Mr. Riddell came to the bureau to direct the work of the minerals division with a wide background of experience in the mineral and mining field. A graduate of the Massachusetts Institute of Technology, he was employed by the American Smelting & Refining Co. for a number of years as chief chemist, assayer, and construction and mechanical engineer; and later spent 10 years as superintendent of the lead smelting plant. He is particularly well qualified to handle the foreign trade work of the division, because of his extensive experience abroad. As consulting engineer for the Broken Hill Associated Smelters in Australia during two years of the war period, 1916-1917, he directed the reorganization of method and equipment of the Broken Hill mines and plants, and the reconstruction of the Port Pirie Smelting Works, the world's largest lead smelter. In 1918, 1919 and 1920 Mr. Riddell held the position of chief of the metals staff of the United States Tariff Commission, and later became a director, consulting engineer and American manager of the Wah Chang Corp. of New York City and Shanghai, China. Mr. Riddell has long been a contributor to trade and finacial journals, and is the coauthor of a number of publications on technical and commercial subjects. He was the editor and coauthor of the United States Tariff Commission's "Industrial Readjustments of Certain Mineral Industries Affected by the War." As consulting engineer for four oil companies in the Wyoming Field and interested for many years in other operating oil companies in the Mid-Continent and Mexican fields, as director and consulting engineer of an Alaskan coal company, and in mining and executive commercial work in China, Mexico and Canada, he has rounded out a broad viewpoint from which to direct the activities of the division.

Under the present organization of the minerals division, the two major subjects handled, petroleum and nonferrous metals and minerals, are kept distinct through the maintaining of separate section devoted to each.

Petroleum Section

The petroleum section is under the direct charge of Homer S. Fox who has been directing the work of the former petroleum division as acting chief prior to the organization of the present division, and James A. Stader has remained in charge of the minerals section.

The activities of the division include the collection, preparation and dissemination of information on foreign markets for American petroleum and mineral products; the rendering of a specific trade information service; and maintenance of general commodity informational files which may be and constantly are consulted by American business men; the giving of assistance in the settlement of trade disputes between American exporters and foreign firms; the collection of data on foreign petroleum and mineral production, consumption, legislation, etc., and many other allied subjects. Some idea of the scope of its work may be gained from the fact that 125 separate mineral commodities, in addition to petroleum and its products, are handled by the division besides, in the petroleum group, the major products, such as gasoline, kerosene, lubricating oils, etc., and shale oil, gasoline substitutes, mineral wax, natural gas and asphalt, as well as the many less important oil products.

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GUY C. RIDDELL
Head of Mineral Division, Bureau of Foreign and Domestic Commerce.

The petroleum section is carrying on the assistance rendered to the American petroleum industry by the former petroleum division, the two principal subjects to which attention is given being the marketing of petroleum products abroad and the preparation of information on foreign petroleum development, production and legislation.

Trade Opportunities

One of the valuable functions of the division is the rendering of specific trade promotion service, chiefly through the medium of "trade opportunities," or information relating to specific opportunities for the sale of American petroleum products abroad. These "trade opportunities" are reported by foreign representatives of the Departments of Commerce and State, in addition to those which come to the direct attention of the division or of the bureau's district offices. Notices of the opportunities are published weekly in Commerce Reports, the weekly publication of the bureau and full information regarding them is available to American exporters on application to the Washington office or to the nearest district or cooperative office. When necessary or advisable, because of the necessity for quick action or for any other reason, special distribution of this information is made to firms which have notified the division of their interest in the particular commodity or market. Several hundred such petroleum trade opportunities have been published, with gratifying results in actual sales. As a result of one notice published in Commerce Reports, an annual export business of $250,000 has been obtained by an American oil company, and much other new or increased business has been similarly developed.

Through another trade opportunity published in Commerce Reports a firm in Spain made connections for the purchase of 20 tons of paraffin wax a month with prospects of increasing this amount. A firm in Rumania established connections with an American exporter through the office of the Commercial Attache in Bucharest and the Division, as a result of which substantially large orders for American petroleum products have been placed. As a result of an inquiry received direct by the bureau in another instance, 1,000 cases of aviation gasoline were purchased from an American firm by a concern in Uruguay. During the latter part of the year negotiations carried on through the division at the request of an American exporter are reported to have resulted in initial orders being placed by a German firm for 600 tons per month of petroleum coke, with prospects of increasing this amount. In many cases it is yet too early to determine the full amount of the business resulting from the trade opportunities handled by the division, but it is evident from the example quoted this service is of increasing value.

Foreign Trade Notes

The industry is kept currently in touch with foreign markets through the various publications of the division, including over 200 special circulars on petroleum; a series of trade information bulletins on the petroleum trade and industry of individual foreign countries, of which 10 have been published, and several others are in course of preparation; a biweekly bulletin entitled "Petroleum Foreign Trade Notes," which makes available the latest cable and others items of interest to the industry; weekly articles in Commerce Reports, of a more general and complete nature than the foreign trade notes; press releases; and replies to individual inquiries by correspondence and by personal contact with the trade.

The usual special circulars are supplemented from time to time by a series of reports on foreign markets for specific commodities. One of these series which is now being published is that on the markets for paraffin wax and candles, of which about 20 individual reports have already been issued.

Commodity and regional lists are maintained from information furnished by exporters, showing the countries and products in which each firm is interested. These lists, which are, of course, kept strictly confidential, are utilized for the purpose of making the most prompt and efficient dissemination of information received, and to avoid unnecessary duplication of services.

The division acts as a point of contact between the industry and the full services of the bureau, including those rendered by the various regional and technical divisions, in matter relating to foreign and commercial laws, patents, and trade marks, tariffs, and many other subjects of interest to the petroleum exporter. A considerable number of trade disputes are submitted to the bureau for such assistance in their settlement as may properly be given. These matters come under the jurisdiction of the Division of Commercial Laws, but in many cases the appropriate commodity division can and does render service to the Division of Commercial Laws in establishing contact with the firm submitting the data, and by giving such technical and trade advice as that division may require in order to approach the problem efficiently. The minerals division considers this class of service, as far as it relates to its commodities, as of no little importance and value.

Statistical Service

The statistical branch of the division's work entails a considerable amount of research, both original and at the request of correspondents, and occupies a fair proportion of the available facilities. A large number of special compilations of United States export and import figures are made up regularly on refuest, and usually these compilations are also made available to the trade press, and if of sufficient general interest are forwarded as well to other firms on the petroleum section of the "Exporters Index." Data requested under this heading usually pertains to more detailed statistics for individual commodities or countries than can be assembled and published by the bureau's statistical division. Petroleum statistics of foreign countries are prepared and published or made available to inquiring firms in as complete form as the limited facilities of the division permit. Among the regular services of this nature are the monthly reports on petroleum imports into a number of foreign countries, such as Argentina, the United Kingdom, and Greece. and exports from Rumania, Mexico, and Poland.

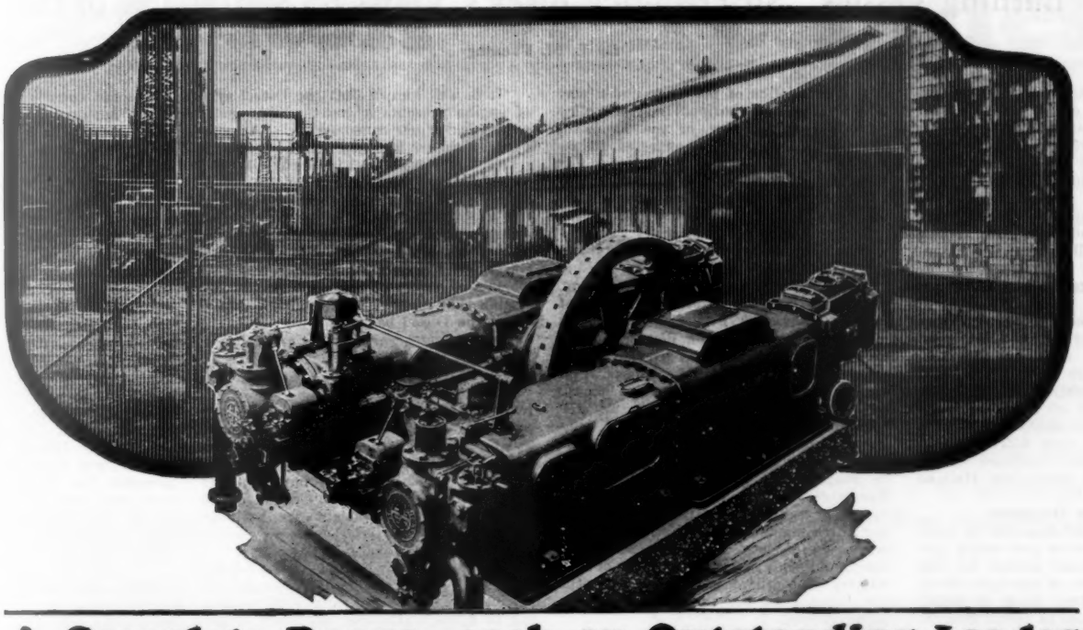
In cooperation with the Commercial Intelligence Division, trade lists are compiled and kept up to date. At present three classes of lists are maintained, one showing foreign importers and dealers in petroleum products, for the assistance of exporters in selling their products, appointing agents, etc.; one of procuring and operating petroleum companies abroad; and one of foreign refineries. In connection with the dealer lists, a selected list of prospective agents, for petroleum products abroad containing somewhat more detailed data than the usual lists, will be compiled for any given country, on request. These agent lists, as well as the others referred to, are ordinarily made available regularly only to firms listed on the Bureau's Exporters Index. To those not familiar with the services of the bureau, it may be explained this "Index" is simply a list of American firms to which foreign trade information gathered by the bureau and its foreign representatives, often at considerable expense, may properly be sent. The lists of foreign refineries as well as those of producing companies abroad, are frequently consulted by manufacturers of drilling equipment, refinery supplies, etc. as well as by petroleum firms.

Answering Inquiries

During the last fiscal year a total of 21,369 inquiries were handled by the petroleum division (now the petroleum section of the minerals division) and the district offices of the bureau, of which number 18,235 inquiries were handled through the district offices and 3,134 direct by the division in Washington. This number included inquiries by mail or telephone and by personal call, as well as inquiries for reserved information on trade opportunities, trade lists, etc. The number of inquiries during that year represents an increase of about 3,000 or some 17 per cent over those for the previous year.

In addition to the country surveys mentioned in a preceding paragraph, the divi-

(Continued on Page 204)



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Amazing Growth of Oil Using Ships

Heavy Residual Oil, Unsuitable for Diesels, Finds Best Market in Oil Burning Vessels. Sir Frederick Black's Views on Marine Use of Oil

By L. M. Fanning

The world's merchant shipping is definitely committed to oil as a fuel, as are the navies of all nationalities. This is in part attested by the growth of oil burning vessels since the outbreak of the World War. On June 30, 1914, there was a total of 701 vessels, aggregating 1,721,747 gross tons, exclusive of Army, Navy, Admiralty and other Government oil burners, using oil as fuel. By June 30, 1923, the world oil burners had increased to 3,348, aggregating 16,478,104 tons.

Oil burning vessels under American registry in 1914 totaled 656,364 gross tons, as compared with 556,743 tons under British registry and 164,871 tons under German registry. In 1923 the United States led in oil burning vessels by a large margin, the total tonnage being 9,017,213, compared with 4,271,167 tons for Britain. Notable increases in oil burning vessels are shown for Holland and Germany.

Dieselization Movement

The outstanding development in shipping at the present time and which presents a great additional market for fuel oil, is the Dieselization of merchant fleets. Great strides have been made in installation of Diesel engines in Great Britain, Germany, Norway and Sweden, particularly in large cargo vessels. Under an amendment to the merchant marine act, a fund of $25,000,000 has been provided to be used by the United States Shipping Board for reconditioning and Dieselizing vessels and an additional $25,000,000 annually is provided to be set aside by the board for a 5-year period to finance individuals and private shipping interests in the construction of vessels to be equipped with Diesel engines.

The board is already converting 12 vessels under this plan, and it is estimated that from 50 to 60 Shipping Board vessels will be converted. In addition the board has some 400 vessels which could be Dieselized, it is estimated. There is every evidence that the Diesel engine as applied to ship propulsion is becoming the accepted type, as compared with the oil-fired steam plant and the coal burner, particularly for cargo vessels and long voyages.

The completion of the work under way in drafting a new national marine policy in this country, now in the hands of Government experts, is expected to result in a revival of the shipbuilding and shipping industries which will bring about greater demands on the oil industry for supplying fuel oil requirements.

Use of Residual Fuel

"Eminent Naval and oil exports frequently call attention to the 'sin' of burning heavy fuel oil for steam raising, instead of reserving it for Diesel types of engines," says Sir Frederick W. Black, in his discussion of bulk distribution of oil. "While it is of great service to the cause of economical use and conservation of fuel that this important point should be stated and restated with all the emphasis that high authority can command, it must not be supposed that this counsel of perfection is immediately to be realized in present circumstances. Nevertheless, it may be recorded that immense and encouraging progress in the more economical use of oil for marine purposes has been made in the recent years, and some of the best brains of this country and others have been and still are engaged on the problem of further improvements.

"First of all let it be remembered that a large proportion of the world's supply of heavy residual oil is not suitable for existing types of Diesel engines, mainly on account of the high percentage of asphalt. Such fuel may, however, be excellent for steam raising. The heavy residual fuel has been produced in the obtaining of other products, e. g., motor spirit and lighting oils required by the world's markets. Consequently, the residual fuel must also find its best market. It follows, therefore, that its use for steam-raising ashore or afloat in certain circumstances may be quite justifiable and necessary. This condition, however, may be modified if, on the one hand, the refiner can profitably cut out a percentage of asphalt; or, on the other hand, if the designer of the Diesel engine can see his way, without imparing the efficiency of his design, to modify his engine to use the fuel with the higher asphaltic content.

"It is well known that the Diesel type of engine presents a great advantage of economical fuel consumption. A comparison shows a consumption (approximately) of 1 ton of oil in the Diesel ship to 4¼ tons of coal, and 3 tons of oil in steam ships with reciprocating engines, and 2½ tons of oil in ships with geared steam turbines. From the highly desirable point of view of economy of fuel consumption and conservation of the world's resources of fuel, it would be desirable that all marine propulsion should be on the Diesel basis.

Does it appear practicable or probable, however, that the Diesel engine will supersede all other types, including the geared steam turbine, for ship propulsion? It cannot be said that this is probable. The Diesel engine has made great progress in the last few years, not only in the number and size of ships so propelled, but also in the improvements in the engines themselves. Ships up to about 20,000 dead weight are built or are building for Diesel engines."

Tonnage of Types

Sir Frederick W. Black states in regard to tonnage of motor ships and of oil burning ships generally that according to Lloyd's Register less than 69 per cent of merchant shipping of the world depend on coal alone, 24 per cent use oil for boilers and nearly 3 per cent are motor ships. The world's total of motor vessels exceeds 800, and the tonnage is about 1,300,000 tons. The British Empire owns about half the total number and about one-third of the total tonnage of motor vessels. A fifth of the total number and about a third of the total tonnage are owned by Norway, Sweden and Denmark. He also points out that about three years ago it was announced in a British Government despatch and in Parliament that the British Navy had become over 90 per cent oil fired. The other principal navies of the world are also large oil consumers.

"The hope that was and is still entertained that the advantages of the turbine may yet be combined with the low fuel consumption of the Diesel awaits fulfillment till metallurgical and other difficulties can be overcome," he continues. For some considerable period, therefore, large burning of oil under boilers is likely to continue, for the two reasons that not every description of heavy fuel oil is not likely to be able to 'take care' pulsion. While the Diesel type of engine is improving and its use is being largely extended, there is still much discussion and consideration necessarily given by shipowners and others to important points such as (1) comparative first cost of Diesel and steam engines respectively, (2) relative cost of upkeep, (3) replacements of spare parts in Diesel engines involving problems as to what parts shall be carried on board and how far engineering establishments at ports abroad are stocked and equipped for this work, (4) at what ports and at what cost are oil supplies obtainable of a quality suitable for Diesel engines, and (5) to what extent must subsidiary engines be provided for working of winches, etc., or in tank steamers to supply for cleaning of tanks when a class of oil differing from the previous cargo has to be carried. * * *

Increase Use of Heavy Oil

"The consumption of heavy fuel for marine purposes may be expected to be more and more on the Diesel engine basis, as stated. This will, of course, lead to economy of fuel in the aggregate, but it has to be borne in mind that Diesel-engined ships are dependent solely upon oil as their fuel. They cannot convert to coal as ships burning fuel under boilers can, and moreover the heavy fuel oil required by many types of Diesel engines must be of the highest grade. If a type of Diesel engine, to yield moderate power and speed in the average cargo steamers, were to be evolved to run on second grade bunker oil, and if necessary on such oil plus from 30 to 40 per cent of pulverized coal, some relief would be afforded to the war problem of rationing the available oil supplies to essential needs.

"Owing to the sea-carrying trade having been stagnant in the past two or three years, the demand for fuel has not been proportionate to the increase of tonnage. When healthy and normal conditions of employment of ocean carriers

(Continued on Page 228)

WORLD OIL BURNERS*
(500 gross tons and over.)

Flag—	June 30, 1914 — Steam Engine No.	Steam Engine Gross	Oil Engine No.	Oil Engine Gross	Total No.	Total Gross	June 30, 1922 — Steam Engine No.	Steam Engine Gross	Oil Engine No.	Oil Engine Gross	Total No.	Total Gross	June 30, 1923 — Steam Engine No.	Steam Engine Gross	Oil Engine No.	Oil Engine Gross	Total No.	Total Gross
†American	231	646,048	8	10,316	239	656,364	1,720	8,710,935	70	146,152	1,790	8,857,087	1,757	8,865,673	69	151,540	1,826	9,017,213
Argentine	...	.....	....	.....	....	.....	4	9,962	6	6,989	10	16,951	4	10,078	9	10,836	13	20,914
Austro-Hungarian	6	25,241	....	.....	6	25,241	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....
Belgian	1	570	2	9,028	3	9,598	7	27,300	1	2,144	8	29,444	10	42,853	....	.....	10	42,853
Brasilian	1	3,822	....	.....	1	3,822	1	3,822	4	5,401	5	9,223	1	3,822	4	5,401	5	9,223
British	111	526,585	10	30,158	121	556,743	530	3,143,816	71	316,612	601	3,460,428	636	3,922,661	79	348,616	715	4,271,167
Chilean	....	.....	....	.....	....	.....	1	7,000	2	2,500	3	9,500	3	16,198	....	.....	3	16,198
Chinese	1	2,230	1	612	2	2,842	1	510	3	2,998	4	3,508	2	6,728	3	2,998	5	9,726
Cuban	....	.....	....	.....	....	.....	3	4,533	1	1,111	4	5,644	4	5,500	....	.....	4	5,500
Danish	1	4,199	10	49,249	11	53,448	11	37,671	31	145,727	42	183,398	18	62,044	34	140,942	52	202,986
Danzig	....	.....	....	.....	....	.....	3	26,907	3	13,371	6	40,278	4	34,571	2	19,864	6	54,435
Dutch	36	76,535	6	14,097	42	90,632	128	533 349	25	59,229	153	592,578	147	660,318	28	51,520	175	711,738
Egyptian	....	.....	....	.....	....	.....	....	.....	4	5,991	4	5,991	....	.....	2	3,049	2	3,049
Esthonian	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	2	1,691	2	1,691
Finnish	....	.....	....	.....	....	.....	3	1,991	3	1,991	....	.....	....	.....	4	2,688	4	2,688
French	4	15,388	4	15,388	47	226,599	10	19,162	57	245,761	52	289,385	7	13,180	59	302,455	66	315,635
German	23	119,138	10	45,733	33	164,871	15	67,073	15	41,894	30	108,967	30	158,422	26	82,044	56	240,466
Greek	....	.....	....	.....	....	.....	9	43,197	1	1,476	10	44,673	9	43,197	1	1,476	10	44,673
Honduran	....	.....	....	.....	....	.....	8	17,106	1	677	9	17,783	8	18,249	....	.....	8	18,249
Italian	1	979	2	1,113	3	2,092	24	123,371	32	68,985	56	192,356	35	183,472	33	69,133	68	252,605
Japanese	5	46,131	....	.....	5	46,131	29	203,381	4	5,171	33	207,552	37	246,941	2	2,443	39	249,384
Mexican	6	17,795	....	.....	6	17,795	10	24,670	....	.....	10	24,670	13	30,930	....	.....	13	30,930
Monaco	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	1	797	1	797
Nacaraguan	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	2	3,138	....	.....	2	3,138
Norwegian	5	31,075	2	2,878	7	33,953	104	511,096	71	157,723	175	668,819	89	436,207	70	171,972	159	608,179
Panaman	....	.....	....	.....	....	.....	1	1,141	1	1,141	2	2,282	2	9,790	1	1,141	3	10,931
Paraguayan	....	.....	....	.....	....	.....	2	3,254	....	.....	2	3,254	....	.....	....	.....	....	.....
Peruvian	5	18,192	....	.....	5	18,192	5	17,611	1	1,684	6	19,195	4	17,069	....	.....	4	17,069
Philippine	....	.....	....	.....	....	.....	1	762	6	8,269	7	9,031	....	.....	....	.....	....	.....
Portuguese	....	.....	....	.....	....	.....	2	2,085	3	2,085	5	4,170	1	1,739	3	2,961	4	4,700
Rumanian	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	1	3,034	....	.....	1	3,034
Russian	3	5,979	....	.....	3	5,979	2	3,038	1	1,090	3	4,128	2	3,038	....	.....	2	3,038
Siamese	5	3,209	....	.....	5	3,209	2	1,203	....	.....	2	1,203	7	5,831	....	.....	7	5,831
Spanish	....	.....	....	.....	....	.....	15	53,557	5	3,144	20	61,703	25	96,865	6	11,751	31	108,616
Swedish	....	.....	4	14,895	4	14,895	9	30,512	38	135,881	47	166,793	12	49,901	42	150,268	54	200,169
Uruguayan	....	.....	1	552	1	552	3	7,043	3	2,872	6	9,915	2	3,402	2	1,957	4	5,359
Total	441	1,527,728	60	194,019	501	1,721,747	2,694	13,838,178	416	1,166,370	3,110	15,004,548	2,917	15,229,946	431	1,248,158	3,348	16,478,104

Year	Steam Engine No.	Steam Engine Gross	Oil Engine No.	Oil Engine Gross	Total No.	Total Gross
1923	2,917	15,229,946	431	1,248,158	3,348	16,478,104
1922	2,694	13,838,178	416	1,166,370	3,110	15,004,548
1921	2,474	12,415,181	374	959,471	2,848	13,374,652
1920	1,731	8,346,913	290	693,334	2,021	9,040,247
1914	441	1,527,728	60	194,019	501	1,721,747

*Exclusive of Army, Navy, Admiralty, and other Government oil burners. †Including oil burners on Great Lakes.
Note—All figures, except for American vessels, are prepared from Lloyd's Register. American vessels from U. S. Bureau of Navigation.

Leschen Wire Lines

Every wire that goes into any Leschen Line is first rigidly tested to make sure that it comes up to our requirements, and any wire that does not is rejected. These tests and our methods of manufacture are some of the reasons why Leschen Wire Lines are the recognized standard of high quality.

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Some of the well known Leschen Oil Field Lines

Rotary Drilling

To meet the requirements of rotary drilling a wire line must be extra strong and extra durable. Its construction must also be such as to enable it to withstand overwinding on drum. For such equipment we recommend

Patent Flattened Strand Hercules (Red Strand) Rotary Cable

This is a line that has all of the necessary qualities for rotary drilling, and its actual service record has proved that it is both a time and money saver.

Cable Tool Drilling

For this kind of drilling there is nothing better than the old reliable "California Special" Drilling Lines. They are in use the world over, and are everywhere recognized as the most dependable line for cable tool drilling.

Service

Next to quality comes service, and in order to best serve the oil industry, Leschen Oil Well Lines are and have been since 1893 distributed through the Oil Well Supply Company of Pittsburgh, Pa., who carry full stocks at all important oil fields.

A. Leschen & Sons Rope Company

(Established 1857)

New York—Chicago—ST. LOUIS—Denver—San Francisco
General Distributors—OIL WELL SUPPLY CO., Pittsburgh, Pa.

American Survey of French Market

Francis C. Cleary Summarizes Impressions and Information Gained During Four Months' Service With American Company in France

By Charles E. Kern

WASHINGTON, D. C., Jan. 26.—Francis C. Cleary, who spent four months in France, attached to an agency of the Vacuum Oil Co., took advantage of exceptional opportunities to make a careful survey of the activities of the oil industry in that country and has prepared a very enlightening review on that subject.

"France produces each year, approximately 50,000 metric tons of petroleum products, while its requirements amount to about 800,000 tons annually," states Mr. Cleary. "France is therefore almost entirely dependent upon foreign supplies and offers a market much sought by all the producing nations. Various endeavors have been made in recent years, both in France proper and in its colonies, to increase production, but so far these have accomplished comparatively little, and France must depend, for some time at least, on other nations for its petroleum supplies. The chief problem of France at present appears to be so to regulate the importation of petroleum products as to insure the supplying of these products to its people at reasonable prices and at the same time to provide an adequate reserve for use in case of emergency."

There are four foreign petroleum interests which are outstanding in France, namely: the Anglo-Persian Oil Co., the Royal Dutch-Shell Group, the Standard Oil Co. of New Jersey, and the Sinclair Consolidated. The main French companies are: Fenaille & Despeaux, Les Fils de A. Deutsch della Meurthe, Raffinerie du Midi, Raffiinerie de Petrole du Nord, Desmarais Freres, Compagnie Generale des Petroles, and Lille, Bonnieres & Colombes, Paix & Co., Cie, Industreille des Petroles and George Lesieur et Ses Fils. These French firms have carried on the business of refining, sale and distribution but during the past 10 or 12 years these so-called refiners have practically abandoned that business and have become importers, sellers and distributors of finished products. They continue to control very largely the distribution of oil in France and they have, either by reason of their own facilities or as a result of their connections with the foreign companies referred to, a certain degree of control over imports.

Distributing Agencies

"The import, sale and distribution of lubricating oil and other byproducts has always been free from Government control," says Mr. Cleary, and, as in other countries, a great number of firms have been engaged in this business. The types of distributing agencies in France are chiefly subsidiary companies, local forwarding agents or brokes, and independent dealers. Subsidiary companies may handle all classes of petroleum products, or merely one general class, as kerosene and gasoline, the same being true of independent sales agencies. Distribution at many points is handled by local forwarding agencies which dispatch petroleum products to other parts of France. Orders, large and small, are sent in from headquarters and are filled by the forwarder and shipper direct to the purchaser."

The Vacuum Oil Co. in France, a subsidiary of the Vacuum Oil Co. in New York, is one of the most representative types of subsidiary companies marketing refined products for their parent company, he states. This company receives its products from New York and markets them in all parts of France through its branches located at such places as Rouen, Nantes, Bordeaux, Toulouse, Marseille, Lyon, Lille, Strasbourg, Nancy and elsewhere. The operation of this company extends to Algéria where it has branches at Alger, Oran, Constantine, and Tunis. All of these branches have in common, "Succursales," or warehouses at such places as Dunkerque, Le Havre, Calais, Dieppe, Bennes, Saint Nazaire, L'Orient, La Rochelle, Bayonne, Nice, Dijon, Reims, Belfort, Epinal, Tours, etc. From the thinnest oil used by automobiles and small engines to the heaviest oil used by steamships, turbines and other high-powered engines are handled by this firm.

Its "Mobiloils," as well as its slogan of "Don't say, 'give me a quart of oil,' make the chart your guide," is as well known in France as it is in the United States. The business organizations of all such companies are somewhat similar. Some of the methods of the Vacuum Oil Co. are of special interest.

One Company's Methods

The main office of the company is in Paris, and it has an agency or warehouse at each principal seaport and inland city of France. Orders and records are handled to such a nicety that the director in Paris knows at all times exactly how many barrels of oil and cans of grease are in each warehouse and agency under his jurisdiction. In a few minutes time he can determine the exact amount of sales by any agency and which warehouse will need a new supply of oil. The system can best be explained by tracing the course of an order for oil which must be established with one of the various agencies and which takes somewhat the following route:

When an order has been established with the agency, three copies (on white sheets) are made of the original which is printed on yellow paper. The order and a white copy are sent to the warehouse which makes the necessary indications—that is, it indicates how much, if not all, of the order has been complied with, freight and customs—on the yellow order, sending it to the agency to be billed, while the white copy is retained in the files. At the moment the yellow order is sent to the warehouse, a white copy is sent to Paris by the agency. This copy goes, firstly, to the sales department for verification of the price per 100 kilograms, following to the shipping department, then to the stock department where the book entries are made and then back to the shipping department where it will again be compared with the original which will have arrived by this time and is then sent to the files. The original order is late in arriving because instead of being sent to Paris, it is returned to the agency which must also be informed of the part which has been taken by the warehouse in connection with the order. The agency then makes out the bill and sends the original order with a copy of the bill to Paris. Upon reaching the main office, this order passes to the shipping department for verification of date of a shipment, then to a department for the freight coupons to be detached and amount paid for freight to be verified, then to the department of verification of bills where the amount is verified and finally to the stock department where the quantity of the shipment is credited to the warehouse shipping it and debited to stock. When it has completed this round, it too, goes to the files.

Carefully Checked

"In this way," says Mr. Cleary, "the yellow order or original follows almost the same course as that taken by the white copy and any mistake that has been made at the warehouse, the agency, or at Paris is checked up. Every Wednesday, figures are compiled from the stock department showing the amount of stock sold and amount remaining in each warehouse. These figures may show that the stock of one warehouse is almost exhausted while that of a nearby one is plentiful, so instead of ordering more oil, a quantity is transferred from those warehouses having a large supply to those whose stock is almost depleted. It is very seldom that a warehouse manager finds it necessary to remind the main office of the amount of his inventory for it is already known—often-times better than he knows it himself. In this way a minimum outlay of capital is required for the oil is imported and distributed in such a way that no warehouse has a large quantity in stock which will take over a month to dispose of.

"The necessity of merchandise transfers is caused, for the most part, by the difficulty in judging the volume of sales at a seaport agency or warehouse. This is because it is almost impossible to judge the number of ships that will put in to take oil or the amount they will take. When the seas are unusually rough it is impossible for bunkering stations in some ports to supply fuel, so weather conditions must also be taken into consideration. At the end of each month, each warehouse and agency is required to send a report to the main office where it is verified and a profit and loss statement and a balance sheet of the entire company in France is sent to the home office in New York."

Of all the importing and distributing centers of petroleum products in France, in which the Vacuum Oil Co. is established, the following are especially worthy of note:

Imports at Havre

At Le Havre, crude petroleum is imported in bulk by tank steamers where it is discharged into receiving tanks on the docks, and then pumped to the refinery tanks close by. The local consumer may purchase at the refinery in bulk and transport in the way most practical for him, or he may purchase his supplies in the regulation sized containers, in casks, drums, barrels or in cans of one liter each. Distribution from storage is effected by tank barges, small coasting steamers, tank wagons or railroad tank cars. However, transportation by railway is exceedingly expensive, and the bulk of petroleum products is handled by river and canal barges. Under the law a tank car may not be attached to a freight or passenger train but a special train must be made up composed entirely of tank cars. A very limited number of tank wagons and tank cars are in use. Vessels of great size cannot be accommodated in the dock so must be supplied

(Continued on Page 158)

Crude Oil Should Be Kept in the Ground Until It Is Really Needed

A. J. CALLAGHAN
President, American Oil Men's Association

"Petroleum America's Security," is the slogan adopted by the American Oil Men's Association at it's last annual convention. Just so long as the oil remains in the ground and taken from the ground only as it is needed, it will be America's security.

A. J. Callaghan

If there is too much production and oil is brought to the surface long before it is required or needed, the industry should see that the necessary amount be brought to the ground and no more.

The industry must equalize production manufacture with consumption and it is only sane that the industry should preserve their capital, which is the oil that is in the ground.

Surely if the industry is going to profit it should be by their experience of the few years just past.

Conditions apeared favorable at this time last year and the year before. Crude prices were advanced, refiners raised their gasoline prices and the marketers the gasoline tank wagon and service station schedules. We all know what happened. The industry brought too much crude to the surface and we spent the greater part of the two years adjusting our markets to this overproduction with resulting losses to many and misunderstanding and suspicion on the part of the public which buys our products. We certainly want to avoid a repetition of these developments another year.

I say cut it.

ments another year.

If it is necessary to cut the price of crude oil to keep it in the ground, I say cut it.

Again I say the industry should equalize itself.

"WESTERN" SUPER-POWER *for every power need in the* Petroleum Industry

Throughout the length and breadth of the power world, the name "Western" is synonymous with efficient, dependable power. This efficient, economical, dependable operation is a built-in feature—an integral part of every "Western" Engine—dominating throughout design and construction from the drawing board to the finished product.

There is a size and type of "Western" Engine especially adapted to every power need in the petroleum industry, where thousands of horsepower operating in all branches of service for more than a quarter of a century are responsible for the fact that ***"A Single 'Western' Engine Frequently Has Changed the Complete Power Policy of an Entire Company."***

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Efficient Dependable POWER

Construction of Oil Field Cordage

Use and Care of Ropes and Lines Used in Drilling Operations. Process Employed in Manufacture of Manila Cable

By J. M. Bregar
Wall Rope Works, Inc.

Manila drilling cable is made from fibre obtained from the abaca plant, which is grown in the Philippine Islands. This plant produces the longest and strongest fibre known and is grown successfully only in the Philippines, though numerous attempts have been made under careful scientific cultivation to produce this high quality of fibre in other parts of the world. A notable instance is the effort of the Japanese to grow abaca in the Island of Formosa, where climate, soil and rainfall are practically identical with those of the Philippine Islands, only a few degrees to the southward. But for some reason unknown to science, all these efforts, so far, have been virtual failures.

Slivers being drawn into spinning machines, which process first gives them an additional combing, then spins the slivers into yarns and automatically winds them on bobbins

The abaca plant is a species of wild banana and bears a fruit, but this is small and almost without flavor. The plant, however, has a twin brother that produces a small green banana of delicious flavor although its fibre in turn suffers and lacks strength and durabiliity.

The plant that produces the fibre consists of a central stalk, anywhere from 10 to 20 feet high in a mature specimen, from which branch out numerous broad leaves of a dark green color. The "stems" of these leaves are an integral part of the trunk; that is, the trunk is in reality composed of successive layers of these "stems." When the tree is cut down these layers of "stems" are stripped off until all there is left of a trunk originally 6 to 10 inches in diameter is a slender pithy cone 2 to 3 inches in diameter at one end and tapering to a spike point at the other.

Obtaining the Fibre

The layers that have been stripped off, known as "tuxies," contain the fibre, embedded in a pulpy vegetable matter. The method of cleansing the fibre of this vegetable matter is still very primitive. A native takes hold of one end of a tuxie and draws it between a weighted knife and a block of hard wood. He then reverses the tuxie and draws through the other end. This process frees the fibre of the vegetable matter as well as of sap of which there is a considerable quantity. The sap contains a large percentage of tannic acid and if allowed to remain on the fibre tends to make it brown and brittle under the action of the sun's heat when hung out to dry.

It is therefore the thoroughness of the cleansing that determines the quality of the fibre and not its length, as is commonly believed. Fibre well cleaned is soft, silky and strong, and is of high quality, whether long or short, while fibre that is put out to dry with sap still on it becomes coarse, brown and brittle, and is of low grade even though it has long length. In fact, much long fibre is of very poor quality.

After the fibre has been cleaned and dried it is transported on the back of the burro which is the native beast of burden, in carts, and even on the backs of the natives themselves, to central depots where it is sorted and graded under the supervision of United States Government inspectors. After it has been baled, and labeled with the Government grade, it is transported to a seaport where shiploads are accumulated. It is then exported to every corner of civilization, but the bulk of it goes to the United States, England and Japan, and to the United States of America goes the highest qualities. In the two former countries it is used almost entirely for cordage, but in Japan a great deal of it is used for the manufacture of various kinds of paper.

Making Drilling Cable

Drilling cable must stand the hardest use of any construction of cordage. It is subjected to the extreme abrasion of constant chafing against the sidewalls of the well; it must contend with the excessive and continuous friction set up by the chafing of the fibres against each other, often when wet and covered with fine particles of pulverized rock that have worked themselves into the cable, and it must withstand the incessant shocks of the violent whipping and jerking attendant upon the constant snapping up and dropping of a heavy drill, usually weighing several tons.

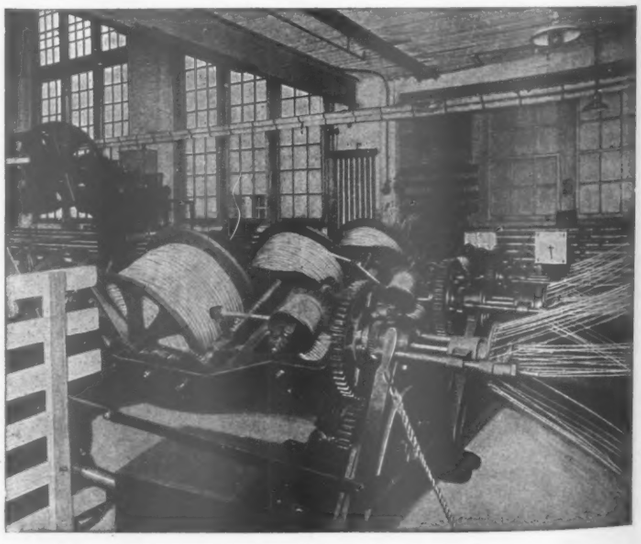
Drilling cable, therefore, if it would drill a maximum of hole, must be made of fibre carefully selected for strength, flexibility and durability. Constant care must be taken, too, in every step in its manufacture from the selection of the fibre, its combing out, spinning, laying and closing, to the careful burlapping of the finished coil to prevent damage in transit.

The first operation in the mill, after the hanks have been taken from the bales, is the combing out of the fibres by being fed into machines having two pin-studded endless chains, the second of which resolves faster than the first one on the feeding end. This combing operation draws the bulk of fibres down smaller and smaller into one continuous ribbon known as a "sliver."

Each lot of fibre is given several such combings, many slivers being fed in at one end of the machine, emerging again at the other end, combed into a single continuous sliver, resembling a woman's hair.

In Spinning Machine

When combed down to the requisite size and unformity, slivers are fed into the spinning machines where, after an additional combing, they are spun into yarns of the threads and automatically wound on bobbins, or spools, each bobbin holding about 10 pounds of yarn. A certain number of yarns of a certain size (the size and number depending upon the size of the rope desired and the use for which it is intended) are then formed and tubed into strands. For small ropes up to ½-inch diameter there are machines that combine the two operations of forming the strands and laying the rope; that is, the yarns enter one end and emerge as finished rope on the other. For larger ropes, however, the two operations of forming and laying are performed by separate machines, and in the case of cable, there are three separate and distinct operations.



Yarns being formed into strands. Both the size and the number of yarns in a strand vary according to the size of the rope, and the use for which it is intended

Three, four, or six strands are laid into ropes. Ropes used for ordinary purposes and for ships' hawsers are generally three strand; ropes used for hoisting over wheels are usually four strand; and ropes used for the transmission of power are four or six strand, with a center core, or heart. Drilling cables are made from three-strand ropes.

The most important step in cable making is to insure that all three ropes or thirds, are so constructed and "closed" together to take their own equal portion of the load when actually drilling. The most common defects are when one strand or "third" is pinched out somewhat from its original position, which fault is commonly known as a "big strand," also when a strand or "third" pulls down out of place which is called a "cut-in strand." Undoubtedly, these are the most prolific causes for complaints about cables and the most difficult to guard against.

Lubrication Vital

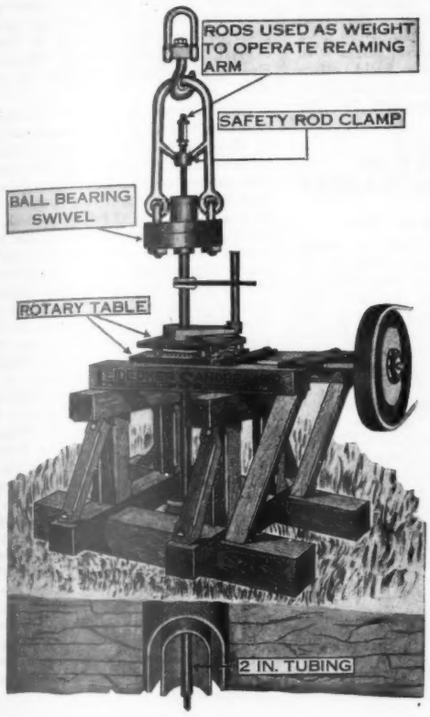
Lubrication, however, is also very vital to satisfactory cable performance. It is the most effective weapon for combating the great amount of friction which exists in the interior of a drilling cable.

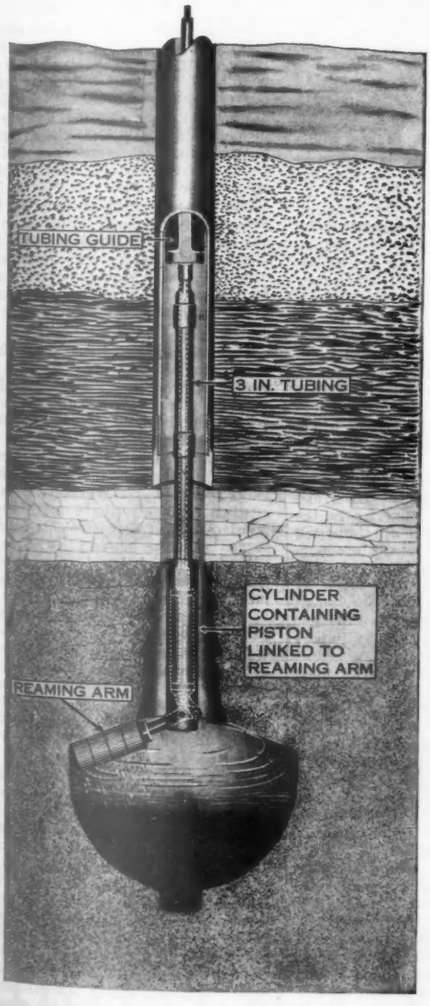
Drilling cable when not in use should be kept under cover and not exposed to the weather. If wet when taken off the machine it should be laid out in the sun to dry before being stowed away. Cable should also be kept away from crude oil, acid or acid fumes of any kind as these are very destructive to the fibre, though the effects are usually not visibly noticeable, there being no prior warning that a weak spot has been developed.

Sand lines are nine-strand ropes constructed exactly like Manila cables but they are smaller in diameter, usually ⅝-inch to 1-inch. Sand lines are used for operating bailers.

Torpedo lines are three-strand ropes usually a quarter-inch in dinmeter and usually tarred. They are used for lowering explosives into wells for "shooting," and are made very uniform in size and of the highest grade fibre.

Bull ropes are three-strand ropes with a special hard lay, and used for transmitting power to the "bull wheel." They are sometimes made of a mixture of Manila with some other species of fibre, but the pure Manila is by far the most economical because bull ropes are usually exposed to the weather and to water from wells and no fibre withstands the ravages of these elements so well as Manila. Manila fibre, also, being very pliable, does not snap when passing over bull wheels under strain and gives the maximum of service.





Break That Seal!

Give Your Wells a Chance to Produce More Oil—

By Using the

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SANDREAMER

PATENT PENDING

To Cut a New Surface on the Walls of the Producing Sand

The Leidecker Sandreamer will positively cut away that seal to more production. Maybe your wells are sealed up with paraffin —with gyp—or with some other impediment. No matter what, you can remove it in a simple, practical way. Its use will save thousands of wells from being abandoned, and will increase your revenue from old wells.

Stop That Pulling

Floating sand is usually caused by wells not being properly cleaned.

Install a Leidecker Sandreamer to get the side walls of your producing sand clean and clear of all shattered or loose sand. The sand is then easily bailed out of the well which stops wells from being continually pulled on account of worn out valve cups.

Increase your production and lower your lifting expense.

Write, wire or phone for complete details and prices.

THE LEIDECKER TOOL COMPANY

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Bartlesville, Okla. Basin, Wyoming Casper, Wyoming

TULSA

Phone 2-6210

LEIDECKER

PIPE LINE BUILDING FELL OFF IN 1924

(Continued From Page 122)

been built for some time and the rate charged is 50 cents per 1,000 feet. Shongaloo has a flat rate of $3.50 a month for each burner used. Lines have been completed to Sarpeta and Cotton Valley, the Sarpeta line built and owned by W. E. Allen, a business man of Sarepta and the Cotton Valley line owned by S. P. D. Coyle, of Cotton Valley and J. A. Mullen of Haynesville. The rate for these two towns is 75 cents per 1,000 feet.

In North Central Texas

New pipe line construction in the North Central Texas fields during 1924 totaled approximately 325 miles. Most of this work was on the extension of lines into new pools and consisted principally of 4 and 6-inch lines. In addition to this there is other pipe line work contemplated and some actually started that will, if taken into consideration, run the pipe line mileage up to around 500 miles.

One of the longest lines built during the year was the Pan-Tex pipe line (Coline Oil Interests) in the Panhandle district. This is a 6-inch line from the producing area of Carson County to the city of Amarillo, a distance of 60 miles. This line was started early in the year and completed late in July. It afforded the first big outlet to the Panhandle producing fields.

Another line in this same field was that of the Panhandle Pipe Line Co., built from the field in northern Carson County to loading rack facilities at the town of Panhandle, a distance of 25 miles. This is a 4-inch line and was built by Wichita Falls interests.

The next longest line actually constructed during the year was that of the Humble Pipe Line Co. from its main station near the northern boundary of Stephens County, north through Young County and into the producing districts of Archer County. This was also a 6-inch line and is about 60 miles in length.

The development of the South Vernon Pool in Wilbarger County necessitated the building of more than 100 miles of 4- and 6-inch lines by four different companies. Three of these lines were built from the Electra Field to the South Vernon Pool, a distance of approximately 25 miles. The Sinclair Pipe Line Co. built a 4-inch line from Electra to Vernon. The Waggoner Refining Co. built a 4-inch line also from Electra to Vernon and The Texas Co. built a 6-inch line between these two points. The Humble Pipe Line Co. extended its line from the Swastika Pool in Archer County to the South Vernon Pool, a distance of about 40 miles. The Humble extension was built one-half of 4-inch pipe and one-half of 6-inch pipe.

Early in the year the Prairie Pipe Line Co. made an extension of its pipe line facilities from the Burkburnett Field in northern Wichita County south to the producing fields in Archer County. This followed closely the purchase by the Prairie Oil & Gas Co. of the producing properties of Ray, Massie & Featherstone in the Archer fields. The line is of 4- and 6-inch and 40 miles in length.

The Wichita Pipe Line Co. laid a 6-inch line from Wichita Falls, south into the Archer fields. This line has a length of approximately 20 miles.

Lines Still Building

There is now under construction, which was started late in 1924, a 6-inch extension of The Texas Co.'s line in Archer County. The line being built from the company's main station in the Wilmot Pool south to the Carey and Harmel pools will, when completed, have a length of about 20 miles. If extended on into Young County for connections with new wells recently brought in there as is now contemplated, about 8 miles will be added to the length of the line.

The Magnolia Pipe Line Co. during the year looped its line from Corsicana north to Pauls Valley, Okla. Eight-inch loops were built.

Late in the year the Humble Pipe Line Co. had started preliminary work toward the construction of an 8-inch line leading into the new oil fields of Reagan County. At the present time no actual construction work has started. As contemplated the line will be an 8-inch and extend from the Humble's connections south of Ranger, west and southwest to Reagan County.

Replacements in the East

No new pipe lines or extensions to the old were laid in the eastern fields during the year. In the old fields more attention was given to taking up old lines and substituting new than in any previous year. The biggest project for this year is the Hope Natural Gas Co.'s proposed 20-inch line to extend from Gilmer County, West Virginia, for a distance of 100 miles to the southwest. The approximate cost will be close to $5,000,000 and the line completed, with two pumping stations and put into commission during next fall or early winter.

DEVELOPMENT NEAR WICHITA MOUNTAINS

(Continued From Page 126)

as soon as improvement is shown in market conditions which seems but a short way off.

A 3,500-foot Test

A 3,500-foot test, which is expected to be carefully watched is that of Glenn J. Smith and Frank Crane of Tulsa on their solid block of 7,000 acres in Caddo County, covering what is known as the Grand View anticline, originally mapped in reconnaissance by Frank Reeves for the United States Geological survey. The location of the well is in the northeast quarter of Section 8, Township 8n, Range 11w, and is 15 miles northwest of Cement and 20 miles northwest of the Chickasha gas field. A 116-foot combination turnbuckle derrick has just been completed and the Santrock Oil & Development Co. of Tulsa, contractors, are moving in tools. A rotary outfit will be used to drill through the red beds and then standardization will take place, carefully testing the sands which are expected in the underlying upper Pennsylvanian.

The Grand View structure shows 40 feet of closure on the Day Creek dolomite, a persistent and satisfactory datum bed.

Considerable study has been made of well logs in this part of Oklahoma for the purpose of determining the thickness of the Permian red beds and also the possibilities of sands below them. As a result of this study the Smith & Crane test seems regionally well located.

What Map Shows

The accompanying map shows: first, the thickening of the red beds away from the mountains and into the Anadarko Basin. In the vicinity of Clinton, the depth of the red beds is at least 3,600 feet. Second, it shows a flattening condition from Hydro east to El Reno. Third, as the Empire Co.'s test near Weatherford encountered practically no sands below the red beds, while east to El Reno and southeast to Cement more and more sands were found, it is believed this test, due to the absence of even lensing sands, was located approximately on the western limit of the underlying Pennsylvanian. (See map). Lime was found below the red beds in the Empire test for several hundred feet and until the well was abandoned.

Below the limestone our data are very meager. However, the test near Canute and the one at Thomas showed a 200-foot sand below it at depths of 4,800 and 3,700 feet, respectively. With these figures one can easily see, under the present conditions, how forlorn oil prospects are at Weatherford and west toward the Anadarko Basin, for we have hardly come to the point of drilling from 3,700 feet to 4,800 feet before striking our first possible oil sand, even if it is a thick one.

On the other hand the region nearer the mountains—from Cement, Fort Cobb, Mountain View and on to Sayre offer better chances. There has been little development in this area recently due largely, perhaps, to the difficulty in determining evidences of structure.

The Chickasha Field has already two producing sands—the Nicholas 2,100-foot and the Ramsey 2,700-foot sands—besides the Magnolia sand (3,100-foot) just recently definitely established. Consequently, the future may have much in store for this area. The Smith & Crane deep test located not far distant, on good structure, and on a northwest trend with Cement and the Chickasha Field, offers at present the most interesting possibility in the territory bordering the Wichita Mountains.

AMERICAN SURVEY OF FRENCH OIL MARKET

(Continued From Page 154)

with fuel oil outside the basin by means of barges which presents one slight drawback of the port, for it is impossible in time of stormy weather to send out barges to vessels in the roads. The cost of fueling is exceedingly heavy in Havre, which probably accounts for so many vessels being sent across to Southampton for refueling.

Marseilles, the most important seaport of France, is practically the sole petroleum importing center for southern France. This port is most important for lubricants which are usually imported in American barrels which are unloaded by the usual methods, and are stored in the warehouses of the distributing firms. Distribution from storage is generally in tin containers, or "bidons;" but occasionally lubricating oil is distributed in the barrels in which it arrives. For automobiles, the average "bidon" is of five liters; but for industrial and maritime use 50-liter "bidons" are common.

At Brest and Dunkerque

The petroleum trade at Brest is largely confined to fuel oil and perhaps one of the main contributing factors in its prosperity is that all of the United States Shipping Board vessels touching at channel ports put in there for fuel. It is also one of the two or three principal stations of the French Navy. The harbor is deep, the climate mild, its geographical location is advantageous and on the whole is said to be one of the finest harbors in the world. The French Government officially suggested, at one time, that the local chamber of commerce of some oil company be subsidized in construction of new reservoirs, primarily for the fueling of merchant vessels, but with the understanding that in time of war or emergency the Navy would have first claim upon them.

Dunkerque is also an important port as far as petroleum is concerned in France. This port supplies northwestern France and northwestern Belgium. Calais is not so important, although a large amount of oil is imported, most of which is forwarded directly to Paris in tank cars and in containers. Rouen is one of the principal ports for the importation of petroleum products into the Lyon district. As there are no refineries in the district itself, all products are imported in the refined State. Petroleum products are sold at retail throughout this district and large sales are often made by the agency of the Vacuum Oil Co. to small independent companies operating in that district but who do not care to import direct.

Nancy and Lille are examples of local centers for distribution. The port of Nice is of secondary importance as practically all American goods are entered at the port of Marseilles or in one of the larger ports of France to supply the material. The main reason of this is that the direct importation of American petroleum into the district of Nice is practically impossible because of the port restrictions.

Excellent Market

"In spite of its many strong competitors, the Vacuum Oil Co. has been making sales amounting to from 12 to 13,000,000 francs monthly in the last year," says Mr. Cleary. "A country so small as France and one that is the source of such lucrative trade in petroleum should soon be the scene of even keener competition than is now prevailing. It is ideally located from American trade in these products and has some of the finest ports and harbors in the world. The great improvement in petroleum transportation and storage facilities also tend to make France the desirable outlet for American petroleum products. It will be a shame if this trade is allowed to slip into the hands of companies more aggressive than those backed by American capital. However, foreign companies in France have many obstacles to contend with."

One instance of this is the subject of taxation which is very complicated. W. C. Huntington, United States Commercial Attache at Paris, in a special report on this subject, states that before doing business in France American concerns should seek advice as to the best methods of initiating and conducting business in that country so as to avoid becoming liable for taxes which might be legitimately avoided by adopting the method most suitable to their particular trade. He further states that the intent of the French law is that foreign corporations shall have no advantage over French corporations, and therefore a foreign corporation is liable to the same taxes as one of French ownership. If a foreign corporation has a branch or any property in France, or even if it makes a loan in France, it should first appoint a "responsible representative"—which in practice can only be a French bank, though there is the alternative of depositing a guaranty in cash, which is generally found unsatisfactory—and comply with a certain number of formalities usually found irksome. He further states that there are other disadvantages for foreign corporations. Apparently it has been found more advantageous for such a corporation to do business through a separate French corporation than by means of a branch organization.

French Taxation

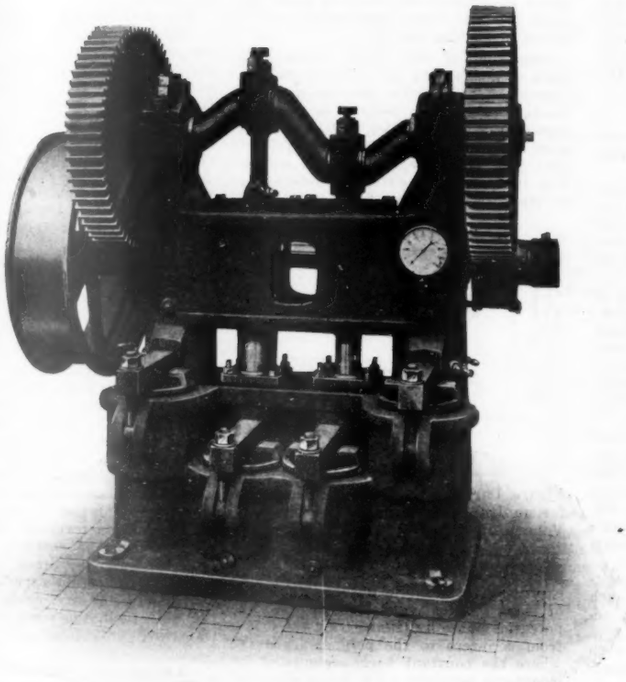
Some of the taxes to which the petroleum trade in France is subject to are: Business turnover tax (tax sur le chiffre d'affaires), internal circulation tax, temporary surtax, tollage duties which are imposed in some sections, and the usual income taxes. Besides, these, some districts have legal restrictions and taxes which are in existence only in that district. For instance, in Havre, foreign companies, operated entirely by foreign capital, are required to agree to place one-third of their stock on hand at the disposal of the French Government if needed. Also, a manufacturers' tax of 20 francs per 100 liters has been imposed upon kerosene and gasoline since June, 1920.

It also appears from recent developments that France has adopted a petroleum policy. The assertion of French rights in Mesopotamia and the conclusion with Poland of an agreement signed in 1921, assuring special advantages in the petroleum fields of that country, are examples of the forward policy which is being followed. In Rumania, French operating companies have taken over the greater part of the petroleum enterprises formerly in the hands of Germans, a development which has been made possible through advances by the French Government. France has also taken steps to develop a common petroleum program with Belgium, the better to assure national supply. A new petroleum regime has been introduced into Madagascar and modifications of the legislation now in force are under consideration of Morocco and Syria. In fact, every field that shows any signs of development is being exploited.

The French Government uses wide discretionary powers in the granting of mineral oil concessions and under this discretion, discriminatory action is possible. No mineral oil concessions appear to have been granted in France, although there are many encouraging indications. In the French colonial possessions of northern Africa several projects are in the course of development. In practice it has been found, according to a Government report, that France and the French colonies are more completely closed to development by American companies than any other part of the world. Mr. Cleary expresses his conviction that for all concerned, petro-

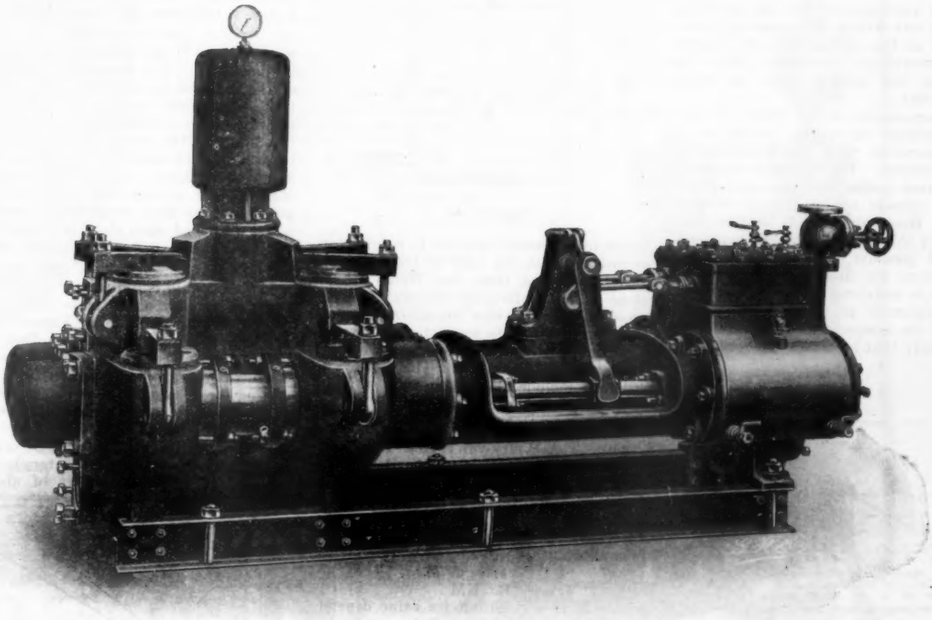
(Continued on Page 202)

Alfred Wirth & Company
Erkelenz, Germany



Wirth Vertical Duplex and Triplex Power Pumps

Wirth Rotary Slush Pumps



HOT GALVANIZED STEEL DERRICKS

Laws Governing Delivery of Fluids

Seventh Article in Mr. Herold's Series on Fluid Recovery From Oil and Gas Reservoirs Deals With Significance of Laws of Physics

By Stanley C. Herold
Petroleum Geologist, Stanford University, California

The laws of physics form the basis of the solution to our problem on the delivery of fluid from reservoirs. Those who have read the two preceding installments may have particularly noted that absolutely no modifications are here being made in the statement of these laws. They are given exactly in the form in which they are universally accepted by physicists. The significance they bear toward matter composing a reservoir is being reviewed in order to develop a close relation between an oil or gas well as a "producer" and the same well as a mathematical unit.

Henry's Law*

138. "Temperature maintained constant, the amount of gas dissolved in a liquid is proportional to the absolute pressure exerted upon them."

By "amount" is meant the mass of gas

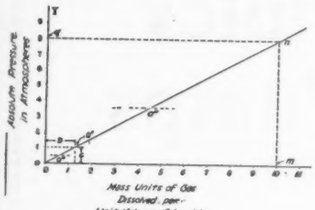


Figure 139

or its quantity by weight. If we adopt a standard pressure for the measurement of gas, say, atmospheric pressure, "amount" may equally as well be expressed in units of volume; e.g., cubic feet, etc.

The law presupposes that the gas is a permanent one within the range of pressures and at the temperature of a particular experiment. (Article 104.) A vapor does not comply with the law. (Article 105).

The temperature of the liquid is important because its ability to act as a solvent increases with the lowering of the temperature. The variation between the dissolving power and the temperature does not appear to be strictly mathematical. Reservoir liquids which contain gas in solution give up the gas upon release of pressure, but this passing of the gas from the dissolved state to the free state is restricted if the temperature of the reservoir is decreased and enhanced if the temperature is increased.

It appears that all gases are soluble in

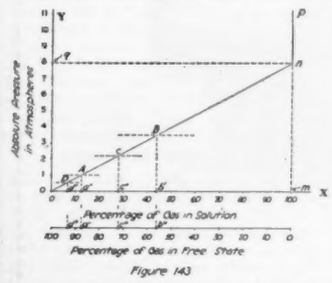


Figure 143

a given liquid to a greater or less degree, and a given gas is soluble in all liquids, also to a greater or less degree. The coefficient of solubility is a number expressing the volume of a given gas at 32 degrees Fahrenheit which is dissolved by a unit volume of a given liquid under one atmosphere of pressure. This number may differ considerably with different combinations of various gases with various liquids. Natural gases are more soluble in natural petroleum than in water, although sufficiently soluble in the latter to necessitate consideration in the study of the Secondary Functions of Fluid Delivery. (Article 43).

Law of van't Hoff

139. Henry's Law is a particular case of the more general van't Hoff* Distribution Law, stated as follows:

"If a substance possesses the same molecular weight in the gaseous and in the dissolved state, its partial pressure in the gas (or vapor), which is in equilibrium with the solution, is proportional to its concentration in the latter."

There may be one gas or a mixture of several gases in contact with the liquid; in the latter case there is no effect upon the ratio of solubility or "ratio of concentration" of any one of them, due to the presence of the others, presupposing the absence of any chemical interaction between molecules of different kinds.

That each single gas in a mixture of gases is dissolved in proportion to its own partial pressure was pointed out by Dalton; and that mixtures of dissolved gases, which do not react with one another, distribute themselves as though each alone were present in the system, was shown by Marcellin Bethelot.

A dissolved natural gas distributes itself between two immiscible liquids, such as natural petroleum and water, in accordance with the ratio of solubility in each liquid. Furthermore, as to each liquid taken separately, the constituents

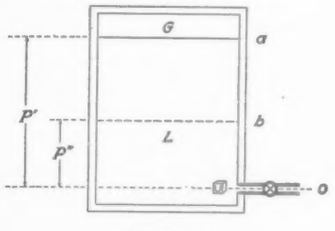


Figure 144

which form natural gas are in solution in accordance with the Law of Distribution.

It is observed, then, that Henry's Law alone is not sufficiently general for the problem on reservoirs containing a composite natural gas in contact with natural petroleum and water. Hereafter, we shall refer to the "Henry-van't Hoff Law" in order to include the entire field of pressure-solution relations.

Expressed Mathematically

140. The Henry-van't Hoff Law may be expressed mathematically, thus:

M varies as P

where M is the mass of gas in solution, per unit volume of liquid, and P is the absolute pressure. Reversing the formula:

P varies as M

or P=KM

where K is a constant, its value depending upon the solubility of the particular gaseous and liquid fluids used in an experiment, also depending upon the units of measurement for P and M. The equation is of the form:

y=px

the equation of the inclined straight line with origin at the point indicating zero absolute pressure. The curve is shown in Figure 140. The angle which the line makes with the X-axis depends upon the value of K above and also the scales employed in plotting the curve.

Inspection of the curve shows that when a gas is once in solution, the last molecule will not leave the liquid unless absolute pressure is reduced to zero, an impossibility in practice. Other means must be resorted to to clear the liquid of gas; such as chemical or thermal means. The curve may be extended indefinitely in the direction away from the origin.

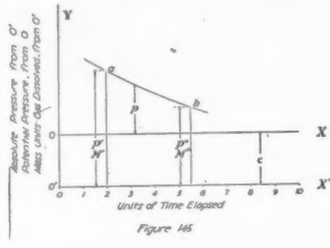


Figure 145

Figure 140 may be entitled, "The Curve for an Unlimited Mass of Gas per Unit Volume of Liquid."

In Absolute Phase

141. The Henry-van't Hoff Law is an expression in absolute phase. The curve of Figure 140 may be transposed to the potential phase by transferring the origin from zero-zero to the point marked O', where the constant back pressure is atmospheric pressure, or to some point O" if the constant back pressure has some other value. With the new origin, the x and y relations are expressed thus:

$$y+C=p(x+D)$$

where C and D are constants as indicated in the figure. The equation is still that of the inclined straight line and it shows that calculations cannot be made in potential phase independently of the two constants. This means that our problems on wells which produce both oil and gas, with or without water, which concern the relative proportions of liquid and gas, may use data obtained in potential phase provided such data is properly altered so as to read, "as of absolute phase."

142. If the amount of gas per unit volume of liquid is limited for a particular experiment; say at 10 mass units as indicated at the point m in Figure 140, a vertical line may be drawn from this point to intersect the curve at point n. Through n draw a horizontal line intersecting the Y-axis at the point q. Remembering that the curve represents the conditions for the given gas and liquid in the experiment (having been determined by test in the physics laboratory), it becomes evident that q units of absolute

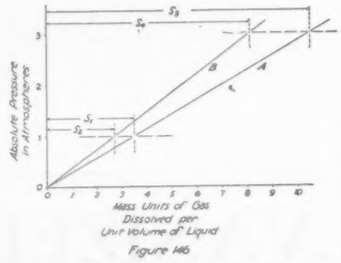


Figure 146

pressure is sufficient to force the entire 10 mass units of gas into solution. A pressure less than q allows some of the gas to remain in the free state and a pressure greater than q tends to compress the liquid.

The statement may be made that, given a definite number of mass units of gas per unit volume of liquid in a particular experiment, there is a critical pressure at which all the specified amount of gas is in solution, or, above which none of the specified amount of gas can remain in the free state. In an experiment where the amount of gas is unlimited, at a given pressure, there is a definite number of mass units of gas dissolved per unit volume of liquid; there cannot be more, nor less. In Figure 140, q units of pressure holds m units of gas in solution.

Curve for Limited Mass

143. Figure 143 may be entitled, "The Curve for a Limited Mass of Gas per Unit Volume of Liquid." For the m units of gas per unit volume of liquid, the critical pressure is q units of pressure; say 8 atmospheres absolute. The curve extends from zero-zero to the point n where it turns and takes the vertical direction. The distance along the X-axis from zero-zero to m may be divided into 100 parts, each part representing 1 per cent of the definite amount of gas. The X-axis may now be entitled, "Percentage of Gas in Solution." An additional scale with numbers reversed may be added for convenience and entitled, "Percentage of Gas in the Free State." These proportions in an actual experiment reduce by arithmetic to; say, cubic feet of gas per barrel of oil, the mass of the gas being expressed in volume at atmospheric pressure.

Let us consider a problem with a particular well which produces oil accompanied by gas. We shall assume for the present that the gas is permanent, there being no vapors. The curve has been determined by test with the given fluids. On a particular day in the life of the well the pressure within the reservoir when the well is closed in is at q, or 8 atmospheres absolute. Production takes place against some Constant Back Pressure represented by the horizontal line through the point B. The vertical line dropped from B shows b' per cent of the gas still in solution and b" per cent has been freed from the solution. If the pressure B is that which is offered at some point in the flow line where gas and oil are separated, it is clear that only b" per cent is obtained. At some other point in the line where the back pressure is less; say, at pressure C, then more gas, equal in amount to c" minus b", has been freed from solution. Final delivery at atmospheric pressure reduces the per cent of gas remaining to a' and increases the per cent freed to a". Application of a vacuum to some point D will set free a still greater per cent of the gas. In the entire course of the fluid, from the interior of the reservoir to the end of the flow line, the path of the curve has been

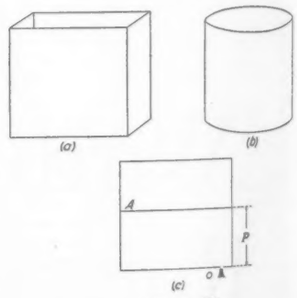
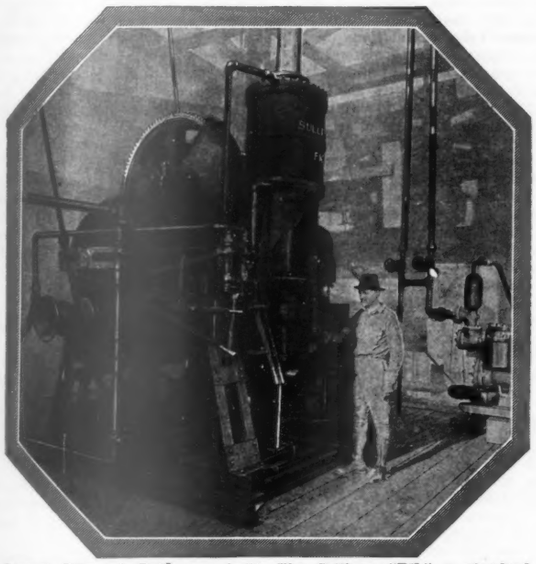


Figure 150

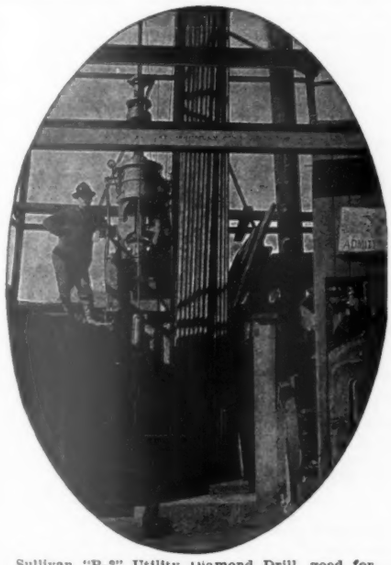
*William Henry, English chemist, 1775-1836. Law dates 1803. Corroborated by Robert Wilhelm Bunsen, German chemist, 1811-1899.

*Jacobus Hendricus van't Hoff, Dutch chemist and physicist, 1852-911. To Walter Nernst, German physicist, is given the credit for making the first complete statement of the Distribution Law in 1891. He named it the Law of van't Hoff.

SULLIVAN DIAMOND CORE DRILLS



Largest Diamond Drill ever built, The Sullivan "FK," a standard machine designed particularly for deep oil field drilling. Capacity 2 in. hole to 7,000 ft., 4 in. hole to 5,000 ft., or will set 4 in. casing at 4,000 ft. Hydraulic feed, 40 tons pressure up or down, weight on frame 10 tons. In successful use in many fields.



Sullivan "P-2" Utility Diamond Drill, good for depths to 3,500 ft. (2¾-in. core.) Holds records for speed in 2,100-foot holes, Tampico district, where many are in use; weight on frame 5½ tons.

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The drill will handle rapidly any formation encountered, giving you speed in either "cable" or "rotary" ground. It will handle mud fluid. It will control heavy rock or gas pressure, without damage or loss.

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Up-to-date Companies now block out their acreage with shallow diamond drill holes. The relative depths of the "Key-bed," as found by the drill cores in a pattern of holes, enable geologists to draw an accurate map of the anticline, and point to the exact site where a well will strike the "high."

30 to 40 Sullivan Drills have been used for this work in Oklahoma and Texas in the past two years. Some Companies own two to a dozen and keep them constantly busy.

In this exploratory work, the Sullivan Diamond Core Drill is unequalled for accuracy, speed and portability. It is a precision tool, the result of 50 years of experience and improvement.

Portability

The light weight and compact design of Sullivan Diamond Drills make them very desirable for foreign fields. For a given depth, a Diamond Drill outfit will weigh half as much, or less, as a rig of either cable or rotary type. Heavy strings of large casing are not necessary.

Sullivan Drills have been used successfully for oil exploration in Colombia, Venezuela, Ecuador, Mexico, Northern Africa, India, Borneo, Australia, etc.

Sullivan Drills were invented in 1875. They have been improved many times, and are still the most modern method of prospecting for minerals. They are built in capacities from 300 to 7,000 feet in depth and for cores from 1 to 7 inches in diameter. Mining men and engineers (or their fathers), in almost every country in the world have used Sullivan Diamond Drills and depend on their accuracy, rapidity and low operating cost.

Experienced drill operators will be sent with Sullivan Drills when desired.

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Santiago, Chile, Casilla 27

traced from a point p to a point A or possibly D.

The behavior of vapors is considered later, under the subject of The Laws of Vaporization.

Gas Dissolved in Liquid

144. Figure 144 represents a rigid tank containing liquid and gas under pressure, with an orifice at O. When the surface of the liquid is at a, the absolute pressure at O is P′ (closed-in pressure) and when the surface has fallen to b, the absolute pressure has reduced to P." What change has taken place regarding the amount of gas dissolved in a unit volume of liquid; say in such a volume as represented by "U" near the entrance to the flow line? Obviously, the number of mass units of gas dissolved has reduced from M′ corresponding with P′ to M" corresponding with P." As production takes place through the orifice, the amount of gas per unit volume of liquid declines. For example, with the liquid surfaces at a, there may be one cubic foot of gas escaping at O, per gallon of liquid, and with the surface at b, the amount may have reduced to as little as one-tenth of a cubic foot per gallon of liquid. What has become of the mass units of gas lost by the unit volume of liquid? Obviously, it has been freed from solution and has taken a position above the surface of the liquid, to accumulate and remain there, at least in part, depending upon the amount per unit volume of liquid present in the beginning. Not all the fluid can be withdrawn from such a tank. (Article 129, eighth paragraph).

145. From the equation of the Henry-van't Hoff Law (Article 140) the following equations may be written:

$$P' = KM'$$

and

$$P'' = KM''$$

These two equations suit any positions a and b in Figure 144. Dividing the first by the second:

$$P'/P'' = M'/M''$$

An equation which may be interpreted for the reservoir considered as follows: The proportional production of gas to liquid at one instant during the life of a reservoir is to the proportional production at another instant as the absolute pressure is at the first instant to the absolute pressure at the other instant.

Figure 145 illustrates a pressure decline curve from some point a to another point b with the proper interval of time between them. Expressed in suitable units P and M may be represented by the same ordinates because they always bear a fixed relation to each other in a given experiment.

The decline curve is a mathematical curve based upon the axes X and Y in potential phase, the former axis being located by the Constant Back Pressure. (Article 129, fifth paragraph) P and M must be based on the axis X,′ at the distance C below axis X. (Article 141).

Ratio of Solubility

146. The equation of the preceding article pertains to conditions within one reservoir, containing a particular liquid and a particular gas. A given reservoir often contains two immiscible liquids; e.g., oil and water. Some problems require a consideration of the fact that a particular gas is dissolved more readily in one of the liquids than in the other, at the same pressure.

Figure 146 shows the line A for the gas with liquid A and the lines B for the same gas with the liquid B. The lines show that the gas is less soluble in B than in A. As previously provided for, temperature is taken at some fixed point in order that the lines A and B represent uniform conditions; eg., 32 degrees Fahrenheit. By adopting a standard pressure for comparison; say, atmospheric pressure, S_1 represents the coefficient of solubility of the gas in liquid A and S_2 that of the gas in liquid B. We may then write:

Ratio of Solubility $= S_1/S_2$.

Occasion may arise when it is more convenient to use some other pressure as a basis of comparison, such as the closed-in pressure of a reservoir at some particular instant during its life, or, the average initial pressure encountered in a given oil or gas field. In this case:

Ratio of Solubility $= S_3/S_4$.

The more nearly perfect is the gas, the more nearly will $S_3/S_4 = S_1/S_2$.

147. Figure 146 may also be used for comparison between two reservoirs. Let line A represent conditions as between a gas and a liquid in one reservoir and line B the conditions within another reservoir. The two reservoirs, A and B, may be in two different producing formations in the same field or they may be in different formations at great distance apart, of the same geological age or not. The ratio of solubility, based on equal pressures, is expressed in the same manner as above.

Some problems may involve a consideration of the case in Article 146 combined with the present case. Both the reservoirs may have two liquids. The solubility

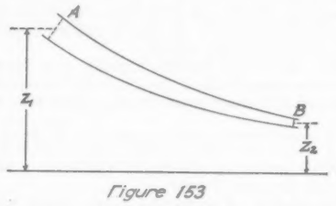

Figure 153

ratio in an actual problem is a number determined by test on the gas and liquid produced from the reservoir.

Laws of Mechanics

148. Mechanics is the science which treats of the motions of material bodies. The very conception of motion involves the abstract notions of geometry, with the notion of time added. The classical scholar in mechanics was Sir Isaac Newton, English natural philosopher, 1642-1727. His fundamental laws of motion are as follows:

Law I. Every body continues in its state of rest or of uniform motion in a straight line, except in so far as it may be compelled by force to change that state.

Law II. Change of motion is proportional to impressed force, and takes place in the direction of the straight line in which the force acts.

Law III. To every action there is always an equal and contrary reaction; or, the mutual actions of any two bodies are always equal and oppositely directed.

These laws are the foundation of the so-called Newtonian Principles of Mechanics. Its concepts are linked with the one-, two-, and three-dimensional space manifold of Euclidean Geometry; the function of time is treated in conjunction with, yet geometrically apart from the space manifold which is ordinarily conceived of with reference to three axes placed 90 degrees apart; the designated X-, Y-, and Z-axes.*

149. The subject of mechanics is a very extensive one. It may be subdivided into the following groups:

(a) Mechanics of a particle and systems of particles in general.

(b) Mechanics of solid bodies, including rigid and nonrigid solids.

(c) Mechanics of fluids including liquids, gases and vapors.

Mechanics of Fluids

The goal of the study of mechanics is the determination of the relation between time, space, mass and force for bodies of these three general classes. Thus we come to understand such as the following:

Conditions of equilibrium.

Conditions of motion.

Gravitation and acceleration.

Principles of work and energy.

Properties of centeroids; e.g.; center of mass, volume, etc.

We are particularly interested in the mechanics of fluids. A few important features of the mechanics of liquid bodies (hydromechanics) are here reviewed because of their important bearing upon the laws of delivery from the gravity solution tank. The mechanics of gases is closely associated with the subject of thermodynamics, a topic for later discussion; therefore, the consideration of gases is left for that time. Our present discussion presupposes a general knowledge of Theoretical Mechanics, the branch of mechanics which deals principally with bodies of the first two divisions above.

Pressure-Volume Relations

150. An important mathematical feature of any gravity solution tank is the area of the free surface which the liquid presents. If the tank is to be maintained full or if the liquid is to be maintained constantly at any given level below the full height of the tank, it is obvious that the area of the free surface remains constant. In this case it is immaterial what shape the tank may have; thus no restrictions were placed upon the type reservoir for hydraulic control. (Article 77).

Where the level changes position as flow takes place from the orifice, only the tank with the proper geometrical shape will provide a constant area for the free surface. Many such shapes may be readily imagined although the most familiar type is the prismatic or cylindrical tank with its axis vertical. The configuration of the horizontal cross-section is immaterial.

Figure 150 illustrates in (a) the prismatic tank and in (b) the cylindrical tank. Any vertical plane imagined cutting through either of these tanks presents a section as shown in (c). A is the area of the liquid surface, P is the head of the liquid on the orifice O, expressed either in units of length or in the usual pressure units.

Pressure Volume Relations

The volume of liquid within the tank is proportional to P. The pressure at the orifice is measured by P and is, of course, proportional to it. The total pressure on the upper side of O is the pressure P plus atmospheric pressure. That on the under side of O is atmospheric pressure alone. The differential pressure on the two sides is Potential Pressure (Article 18), here equal in value to P. The vol-

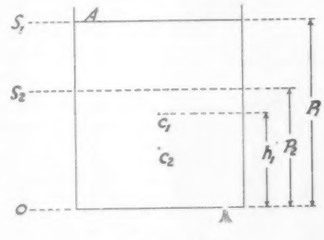

Figure 155

ume is potential volume. (Article 22). The following equation in potential phase may be written:

$$P = KV$$

which reads: The potential pressure is equal to the potential volume multiplied by a constant. The value of K depends only upon the units chosen for P and V. This equation is identical with the one obtained by experiment with the rigid tank, testing Boyle's Law. (Articles 126 and 127.)

These are the pressure volume relations for the type gravity solution tank for volumetric control. (Article 79) 151. Certain other classes of tanks are frequently met in practice. The following are examples:

(a) The V-shaped tank with sides plane but meeting at an angle at the bottom, or truncated before reaching the bottom.

(b) The pyramidal or conical tank, where all sides meet at a point at the bottom or are truncated before reaching this point.

(c) The cylindrical tank with axis horizontal.

(d) The spherical tank.

It is obvious that with these tanks the area is not constant as the level of the liquid changes. The volume contained by them is not directly proportional to the height of the surface or to the pressure, therefore, the pressure-volume relations cannot be expressed as in the preceding article. There is, nevertheless, a certain mathematical relation between pressure and volume for each one.

For convenience, all such tanks where the area of the free surface of the liquid may be expressed as some mathematical function of the liquid height, other than the direct or straight-line relation, will be classed as sub-volumetric control reservoirs. All gravity solution tanks, irrespective of shape, laterally or vertically, show a definite fixed relation between pressure and velocity of flow from the orifice at all instants during the life of the reservoir. This relation is known as Torricelli's Theorem.

Torricelli's Theorem*

152. "From a small orifice in the side of a vessel containing liquid, the theoretic velocity of flow is the same as that acquired by a body falling freely from rest through a vertical distance equal to the head of the liquid on the orifice."

The proposition states that:

$$v = \sqrt{2gh}$$

where v is lineal velocity expressed, say, in feet per second; then,

g is acceleration due to gravity; 32.17 feet per second per second; h is the pressure on the orifice expressed in feet of liquid. The exact fulfillment of the equation requires:

(a) No resistance against flow offered by air.

(b) No friction at the orifice edges.

(c) No molecular friction within the liquid; i.e., no conversion of mechanical energy into heat upon flow.

This principle is known from experience and it may also be deduced from the theory of energy, using Bernoulli's Theorem.

Inspection shows this equation to be one in potential phase. Since velocity, as used in this treatise, (Article 24 to 27) is directly proportional to lineal velocity at any given orifice not manipulated, the v above may be transcribed into Ve. The h may be changed to P and the constant, $\sqrt{2g}$, changed to some constant K. We then have the following equation:

$$Ve = K\sqrt{P}$$

An equation which reads: The potential velocity is equal to the square root of the potential pressure multiplied by a constant. The value of K depends upon all factors which influence the rate of flow from the orifice, including coefficients due to those features which tend to prevent the exact fulfillment of Torricelli's equation; acceleration due to gravity, and the units chosen for Ve and P.

The present equation is one of the derived primary function relations, the curve for which was listed in Article 9. Squaring each member of the equation and reversing, we have:

$$P = KVe^2$$

With potential pressure as ordinates and potential velocity as abscissas, the curve is the parabola with its vertex at the point where P and Ve equal zero.

Either equation, and also the curve, shows that to increase the velocity at a given orifice, to, say, double the rate, four times the pressure is necessary. Or, if potential pressure has declined to one-half its original amount, the potential velocity has only declined to approximately seven-tenths of its original value.

Bernoulli's Theorem*

153. This theorem is obtained by applying the theory of energy to a portion of a steadily flowing stream. In Figure 153 consider the volume included between two fixed cross sections, A and B.

Let p = the intensity of pressure at any point in the section.

z = height of the section above a horizontal datum plane.

v = velocity of flow across the section.

W = weight of liquid passing the section per unit of time.

w = weight of a unit volume of the liquid.

(Continued on Page 202)

*The Einstein principles of motion require the complete union of the geometrical conceptions of space and time by the addition of a fourth 90-degree axis, the T-axis, forming the "space-time" manifold. Our daily experiences do not permit us to visualize the location of this axis because the manifold is now an abstract mathematical conception. The geometry of the space-time manifold is non-Euclidean. What appears to us in space as a straight line is a curved one in space-time; it is the same line only the conception of it differs.—Albert Einstein, German mathematician, physicist and physical chemist, 1879.

*Evangelista Togricelli, Italian physicist and mathematician, 1608-1647. Theorem dates 1644.

*Daniel Berneulli, Dutch mathematician, 1700-1782. ublished his "Hydrodynamica" in 1738.

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Oil Security Prices Paralleled 1923

Reached Highest Levels Early in Year and Suffered Slump in Fall. Optimism Pervades Market on Outlook for 1925

By N. O. Fanning

NEW YORK, Jan. 26.—The course of oil security prices during 1924 was unusually parallel with that of 1923. The early months of each year saw them at their highest levels. A slump occurred which reached its lowest point in the fall and at the close of each year oil stocks experienced a brisk upward movement.

Not only did oil stocks follow about the same course each year, but they were at approximately the same levels. The Oil and Gas Journal's weekly average price of 20 representative oil securities listed on the New York Stock Exchange closed 1924 at 51.73, compared with 53.77 at the close of 1923.

The peak of the average during 1924 was 57.46 on February 5. The peak during 1923 was 62.17 on March 4. The low point in 1924 was 45.24 on October 11, as against a low of 41.43 on September 18, 1923.

A comparison of 1924 and 1923, however, may not be particularly reflective of the changes which have come about in the oil industry bearing upon the prices of oil securities. The record for the years 1918 to 1924, inclusive, is more illuminating. The low point at which the average stood during the period was approximately 30.32 in the summer of 1921, which compared with a previous low of 31.00 at the beginning of 1918. The high point for the seven-year period was 65.48 in the fall of 1919. At the close of 1924, therefore, the average at 51.73 shows a gain of 21.41 points, or about 70 per cent over the post-war low. It is still 13.75 points, or about 20 per cent below the post-war high.

A significant fact is that since 1921 the average has worked higher and despite reactions has never come even within 10 points of reaching the 1921 low. This is believed to be a recognition of the steady increase in consumption of oil which would make an advance in prices bring prosperity to the petroleum business in short order.

Consumption Shows Gain

Consumption of American and imported oil in 1924 is estimated at 750,000,000 bbls., compared with 728,000,000 in 1923. The record for the last seven years is as follows: (Barrels):

1924 (estimated)	750,000,000
1923	728,000,000
1922	602,000,000
1921	535,000,000
1920	540,000,000
1919	426,000,000
1918	417,000,000

Despite this increase in consumption approximately 270,000,000 bbls. have been added to storage during the seven years due to overproduction of domestic crude oil. This addition to storage looks less forbidding, however, when it is recognized that stocks at the beginning of 1918 were subnormal due to the heavy war drain, and hat the gain in consumption since 1918 makes larger stocks now economically sound in many respects.

Outlook for 1925

The beginning of 1925 finds the oil business in an optimistic mood which is very much like that of the two preceding years. The advance in oil stocks at the end of both 1923 and 1924 put the industry in a hopeful frame of mind. In both years bitter disappointment was the portion of those who put too much faith in this upturn as a reflection of coming events. However, the present year offers a much different situation. Now the political and business horizon is extremely bright throughout the world. Production undoubtedly tends lower, but this factor is still uncertain. Not until there has been a withdrawal from storage at the rate of 10,000,000 bbls monthly for several months will unchecked optimism be justified, in the opinion of the more conservative leaders of the oil industry.

Journal's Three-Year Averages

The following table shows the course of The Journal's weekly average price of 20 oil securities listed on the New York Stock Exchange since a weekly compilation of the average was made in April, 1922. (The chart shows the same thing in graphic form.)

	1924	1923	1922
January 8	52.68	58.82	.....
January 15	53.77	58.62	.....
January 22	53.90	58.85	.....
January 29	55.40	57.91	.....
February 5	57.46	61.10	.....
February 11	56.67	59.37	.....
February 19	52.24	59.92	.....
February 26	53.12	59.67	.....
March 4	52.38	62.17	.....
March 11	53.38	61.70	.....
March 18	51.53	61.36	.....
March 25	51.82	60.39	.....
April 1	51.74	57.79	.....
April 8	52.66	57.43	53.23
April 15	50.13	56.44	54.68
April 22	46.77	55.98	54.93
April 29	49.56	53.52	54.25
May 6	49.59	52.40	56.65
May 13	48.24	53.27	55.80
May 20	48.25	51.59	55.90
May 27	48.25	51.59	55.90
May 27	49.01	55.00	57.56
June 3	48.88	53.68	59.15
June 10	47.63	51.75	60.18
June 17	47.94	48.26	55.90
June 23	46.92	47.52	57.55
June 30	47.69	45.48	57.26
July 7	48.28	45.90	55.93
July 14	46.96	46.52	56.60
July 21	47.28	45.32	55.12
July 28	47.86	42.58	53.99
August 4	49.71	43.87	54.23
August 11	47.48	43.39	54.02
August 18	47.85	44.24	54.97
August 25	47.01	44.18	57.63
August 30	47.59	44.06	57.75
September 8	47.89	44.78	59.30
September 15	47.41	41.43	59.85
September 22	47.02	42.48	59.02
September 29	46.70	43.53	60.60
October 6	46.20	43.29	60.46
October 11	45.24	42.80	62.55
October 20	46.99	42.42	63.84
October 27	47.58	41.66	62.41
November 3	48.16	42.60	59.00
November 10	51.86	43.84	60.00
November 17	50.07	45.26	56.22
November 24	50.23	47.74	56.69
December 1	49.59	48.66	57.12
December 8	49.49	49.27	58.01
December 15	50.35	51.20	56.22
December 22	50.76	52.28	57.26
December 29	51.73	53.77	59.20

The extreme range in the average during the period of nearly three years is 22.41 points between the high of 63.84 in October, 1922 and 41.43 in September, 1923.

Transactions on Exchange

During 1924 63 oil issues were traded in on the New York Stock Exchange, representing common and preferred stocks of 46 companies. Stocks of four concerns were listed during the year, including two California companies (General Petroleum Corp. and Union Oil Co. of California) in addition American Republic Corp. and Pierce Petroleum.

Total transactions in oil securities on the exchange aggregated 42,734,581 shares. California Petroleum, Cosden & Co., common, Marland Oil, Mexican Seaboard Oil, Pacific Oil, Pan American common and common B, Phillips Petroleum, Pure Oil common, Shell Union common, Simms Petroleum, Sinclair common, Standard of California, Stanard Oil of New Jersey common, Superior Oil, The Texas Co., and Transcontinental Oil transactions during 1924 exceeded 1,000,000 shares each.

The following table shows number of shares traded in during 1924, closing prices for 1923 and 1924, of all oil stocks listed on the New York Stock Exchange:

Company—	No. shares traded in	Open	Close
American Republics	7,100	.....	47
Associated Oil	534,620	29½	33⅝
Atlantic Ref. com.	540,200	132½	95½
Atlantic Ref. pfd.	15,280	117	114
Barnsdall Corp. A	485,900	16	23½
Barnsdall Corp. B	53,101	10	17½
Caddo Cent'l O. & R.	85,400	2	1¼
California Pet. com.	1,121,200	26⅝	23⅝
California Pet. pfd.	35,750	96½	99¾
Cosden & Co. com	2,448,058	35⅝	26⅜
Cosden & Co. pfd.	12,600	92½	80
Gen. Am. T. Car com	88,800	45⅝	51⅝
Gen. Am. T. Car pfd.	9,550	93	97¾
General Asphalt com.	933,800	40¾	62½
General Asphalt pfd.	35,200	71¾	100
General Petroleum	695,500	.....	42¼
Houston Oil	634,900	70⅝	80
Independent O. & G.	405,600	6¾	16
Indiahoma Refining	78,000	1⅝	⅝
Indian Ref. com.	103,300	4⅞	5¼
Indian Ref. pfd.	2,200	49½	75
Invincible Oil	747,660	16⅞	15⅛
Kansas & Gulf	35,500	⅝	⅝
Maracaibo Oil Expl.	526,900	27⅛	28¾
Marland Oil	3,198,700	38⅛	38½
Mex. Seaboard Oil.	1,185,400	15⅜	21⅛
Middle States Oil	988,806	6½	1½
National Supply com	186,200	66	61¾
National Supply pfd.	3,500	114½	108
Oklahoma P. & R.	74,100	1⅝	2¼
Pacific Oil	2,698,065	51	54⅛
Pan Amer. Pet. & T.	1,093,100	61¼	64
Pan Am. Pet. & T. B	3,937,500	59⅝	64
Panhandle Producing & Refining com	16,050	2½	2½
Panhandle Producing & Refining pfd.	3,100	40½	40⅛
Phillips Petroleum	2,758,850	35⅝	37
Pierce Oil com.	386,000	2¼	1⅝
Pierce Oil pfd.	109,400	23	25
Pierce Petroleum	361,300	.....	5⅜
Prod. & Ref. com	787,500	42⅜	28⅞
Prod. & Ref. pfd.	4,600	47⅞	43½
Pure Oil com.	1,128,042	24⅞	29⅝
Pure Oil 8% pfd.	17,200	93	104
Shell T. & T.	24,300	34¼	42
Shell Union Oil com	1,785,100	17	22½
Shell Union Oil pfd.	31,800	92½	99½
Simms Petroleum	1,012,350	12	23
Sinclair Cons. com.	2,569,299	26½	17⅛
Sinclair Cons. Oil pfd	33,100	85½	79
Skelly Oil	557,500	25⅞	24½
S. O. of California	1,365,300	64¼	62⅝
S. O. of N. J. com.	1,857,750	40⅞	40½
S. O. of N. J. pfd.	71,920	117	117½
Superior Oil	1,357,770	2¼	4⅞
The Texas Co.	1,119,000	44½	43¼
Texas & Pac. C. & O.	403,700	11⅝	11⅝
Tide Water Oil	92,300	122⅞	130½
Transcontinental Oil	2,189,860	4⅛	4
Union Oil of Cal.	255,900	.....	37⅝
Union Tank Car com	56,400	94½	124
Union Tank Car pfd.	10,800	107½	114
White Eagle O. & R.	214,000	26¾	27⅞
White Oil	43,800	⅝	1
Total No. shares	42,778,381		

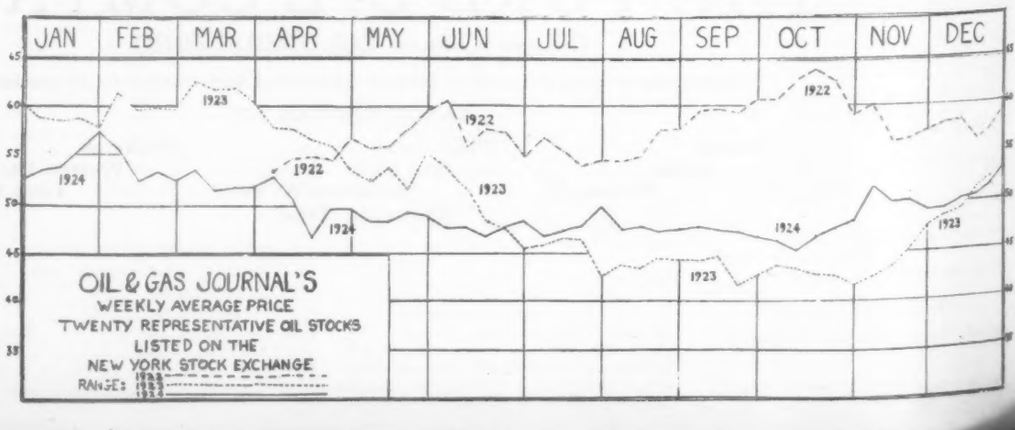
Heaviest trading during the year was in Pan American B, aggregating 3,937,500 shares. Second largest was Marland Oil, 3,198,700 shares.

The financing during the year 1924 was about equal to that of 1923, aggregating approximately $120,000,000. However, the total is far below that of 1919, 1920 or 1921, when there was a flood of new oil issues, aggregating at least $1,000,000,000 for the three-year period, including $200,000,000 by Standard of New Jersey alone.

Principal items of new financing by oil companies during 1924 were as follows:

Marland Oil, 300,000 shares stock at $30	$ 9,000,000
Superior Oil, 5-year, first mortgage, 7 per cent sinking fund bonds	1,000,000
Barnsdall Corp., 40,000 shares A stock at $25	1,000,000
Prudential Oil Corp., 6 per cent first mortgage serial bonds	2,000,000
Chesebrough Mfg., 20,000 shares stock at $52	1,040,000
Royal Dutch, approximately 800,000 shares at $13.50	10,800,000
Atlantic Refining, 2-4-year 4½ per cent notes	15,000,000
Pierce Petroleum, 1,348,500 shares at $7	9,439,500
Skelly Oil, 3-year, 6½ per cent convertible notes	6,850,000
General Asphalt, 6 per cent, 15-year debentures	5,000,000
Pan American Petroleum & Transport, 6 per cent, 10-year convertible bonds	12,000,000
Transcontinental Oil, 2,000,000 shares stock at $6	12,000,000
Marland Oil, 2-year, 5 per cent notes	20,000,000
Sinclair Consolidated, 3-year, 6 per cent first lien collateral bonds	15,000,000
Total par value	$120,139,000

The beginning of 1925 finds many rumors of stock dividends and split-up of shares. Prominent among the stories of split-up to which credit is attached is that concerning South Penn Oil and Tide Water Oil. Imperial Oil, Ltd., will vote on a plan to split up the stock this month.



NATURAL GASOLINE PROGRESS IN ARKANSAS

Development of the natural gasoline industry in Arkansas resulted in the construction of eight plants using casinghead gas in the El Dorado district in 1924, with an aggregate capacity of 59,900 gallons a day. The plants are owned and operated as follows:

	No. of Plants	Dy. Prod. Gallons
Standard Oil Co. of La.	1	30,000
F. C. Henderson	1	12,000
Stebbins Oil & Gas Co.	1	2,000
Natural Gas & Pet. Co.	2	10,000
Gulf Refining Co.	2	3,000
R. L. Crook	1	2,000
Total	8	59,900

DEATH OF MRS. E. C. REEP

Mrs. Mary Elizabeth Reep, wife of Earl C. Reep, an official of the Hope Natural Gas Co., died at her home at Clarksburg, W. Va., at the age of 44 years, from a complicaation of diseases.

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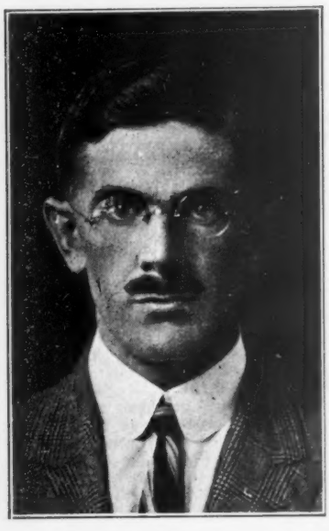
Year's Work of U.S. Geological Survey

Progress Reported in Several Lines of Investigation Bearing on Petroleum and Natural Gas. Field and Laboratory Record

By Charles E. Kern

WASHINGTON, D. C., Jan. 26.—During 1924, the United States Geological Survey has made progress in several lines of investigation bearing on petroleum and natural gas. Field and laboratory studies of the fundamental principles of the origin and accumulation of these substances have been continued, which should lead to easier discovery and more complete recovery of oil and gas. Studies have been made of regional structural relations and stratigraphic correlation, partly as special problems and partly in connection with the geologic examination



W. T. THOM, Jr.,
Geologist, in charge of the section of fuels in the Division of Geology

of producing fields and the search for areas that may be favorable for production. The gathering and issue of statistics on the output of oil and gas have been continued as in former years.

One of the most important investigations was that carried on by A. F. Melcher on the porosity and texture of sands, especially by an examination of the cores obtained by the diamond drill. The character of the sands affects not only their suitability as reservoirs but also the movement of liquids or gases through them. The migration of oil and gas is too little understood; we do not know definitely what forces cause the movement, what conditions interfere with or prevent movement, or how far or fast the substances will move. Further knowledge of the factors should indicate where migration has brought oil or gas into favorable folds and where further migration by flushing has drained the reservoirs; moreover, it should suggest better methods for increasing recovery of the distressingly large part of the original oil content now left in the ground. Efforts at increased recovery in several older fields by compressed air or gas, by vacuum, by water flooding, and by natural gas under its own pressure have met with some success, but Melcher has shown by samples from the Bradford Field, Pennsylvania, that even after water flooding about 65 per cent of the original oil was left in the sand. More detailed studies of the sands and their lateral variations should result in better manipulation and far better results. The threatened shortage of our supply of petroleum obtainable by present methods makes increased recovery an imperative need.

Deep earth temperatures as observed in wells have been studied by C. E. Van Orstrand. The most complete records are those from the Salt Creek Field, Wyoming; these seem to show a definite relation between temperatures and structures within the field, and suggest a possible method of determining underground structure by temperature measurements in wells in which key beds are not found. For example, three or for wells in shale might normally not give a clue to the structure, but variations in temperature might indicate the actual dip of the beds.

Chemical studies of the nature of oil and oil shale have been pursued by E. T. Erickson, with a view to questions of origin and especially to determine the part played by fish remains in contributing the organic material from which oil and gas were formed.

Because oil shale is a great reserve to which we can turn as our supply of well oil diminishes, it has been given

J. D. NORTHROP
Geologist, assistant chief of the Land Classification Branch and chief of the Division of Mineral Classification.

particular attention. David White has been carrying on microthermal studies of oil shale; special methods have been devised in the attempt to determine the temperature at which the several organic substances composing the oil shale break down, and also the nature of the distillate yielded by each kind of organic matter. This scientific approach to the subject promises data that should be of great assistance in choosing the proper processes and temperatures to be used on various shales in commercial development.

W. H. Bradley also has been working on the problem of oil shale. In the laboratory he has made a microscopic study of the composition of shales from several fields and has published several articles on the components and probable origin of the shale. In the field he has investigated several present-day lakes probably similar to those in which the oil shale was formed, and has also studied and mapped parts of the oil shale region of Wyoming, Utah and Colorado, observing particularly the shore phases of the sediments, the lateral variations in the percentage of organic and inorganic material, and the probable conditions under which the richer shales were deposited.

The occurrence of rare metals in petroleum and their possible role in the formation of oil has been receiving increasing attention, and an extensive record of such occurrence has been built up by R. C. Wells and F. H. Hess. It seemed possible that a study of the components other than carbon in the coke from oil stills and from locomotive fire boxes would give much additional data on this problem. Many samples of these materials were secured, and analyses are being made by R. C. Wells. It is hoped that among the results to be obtained will be an answer to the question of whether the vanadium and other included minerals served as catalyzers in the formation of petroleum from the organic detritus.

M. I. Goldman has continued his study of sediments, and has paid special attention to the cap rocks of salt domes in the Gulf Coast fields. M. N. Bramlette has worked on underground correlation of strata by their lithologic character, as determined by microscopic study of drill cuttings from deep wells.

Identification and correlation of underground strata by their micro-fossils has lately come into widespread practice. P. V. Roundy has been carrying on work of this sort; moreover, he and other paleontologists of the Survey have identified thousands of fossils sent in from different parts of the United States and from the West Indies and Central and South America, in many instances principally as a means of discovering the

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geological horizons at which oil may be found.

Broad stratigraphic correlations have been in progress in Texas, in Kansas (largely by subsurface work in cooperation with the Kansas Geological Survey), and in the Rocky Mountain States, for example, between eastern Utah and western Colorado, between northwestern Colorado and southern Wyoming, and between Wyoming and southeastern Montana. These studies have been carried on by T. W. Stanton, J. B. Reeside, Jr., L. W. Stephenson, J. A Gardner, J. D. Sears, N. W. Bass, C. E. Dobbin, A. A. Baker, Frank Reeves, and other field geologists mentioned in this article. Regional structural studies have also been pushed forward, and a cooperative arrangement has been entered into with the Oklahoma Geological Survey for the preparation of a generalized structure contour map of the northeast quarter of the State. A preliminary edition of the geological map of Oklahoma was issued late in the year, and geological maps of Wyoming, Arizona, New Mexico, and Texas were nearing completion. A map showing petroleum and natural gas fields and oil pipe lines in Texas was published during the year.

Among the geologic examinations of particular areas made to determine the possibilities of oil and gas the one that was perhaps most spectacular, was the exploration of Naval Reserve No. 4 in Arctic Alaska by parties in charge of P. S. Smith, following work already done in the Reserve in 1923. This investigation of the largest tract of unexplored United States territory was made at the request of the Secretary of the Navy to determine the possibility of finding oil in quantities sufficient to add materially to the reserves for the future use of the Navy, if not indeed large enough to augment the Nation's supply for other needs. The parties started northward with dog sledges from Yukon in February, and spent the spring and summer in the Reserve.

Another examination, far less spectacular but of considerable public interest, was a reconnaissance survey of the oil and gas possibilities of northeastern Colorado by K. F. Mather and associates. W. W. Rubey completed his examination of the area around the Black Hills rim, started several years earlier. A. J. Collier mapped a number of anticlines in southern Wyoming, and J. B. Eby examined the Baggs anticline, Wyoming, and the Slater Dome, Colorado. The vicinity of the Barber Creek Dome in Colorado and New Mexico was surveyed by W. W. Boyer, and the San Rafael Swell, Utah, by E. M. Spieker and James Gilluly.

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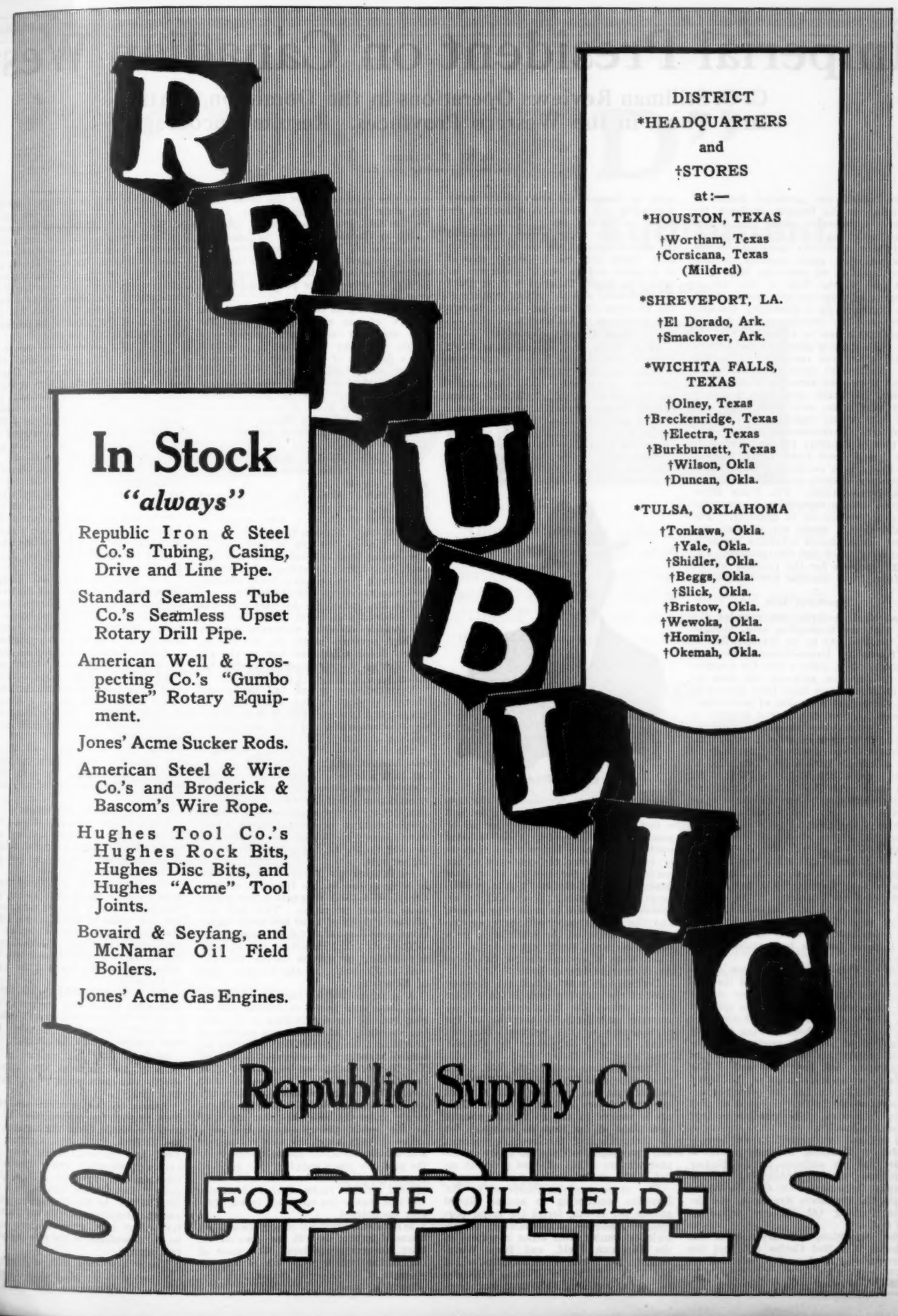
The detailed information thus gathered, together with that already on file in the Washington office, assists the Survey in acting as advisor in the administration of the public land and leasing laws. During the year 16 areas embracing 34,584 acres, were defined as "within the known geologic structure of a producing oil field," thus requiring leases for drilling; 6,459 oil and gas permits, 50 leases, and 910 classifications were acted upon, and 308 oil and gas development

(Continued on Page 271)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Imperial President on Canadian West

C. O. Stillman Reviews Operations in the Dominion, Particularly Those in the Western Provinces. Results Encouraging

By C. O. Stillman
President of Imperial Oil, Ltd.

The gradual but persistent decline of production in the Ontario oil fields, the abortive attempts to arrest this decline by deeper drilling in the known fields, and the failure of wildcat operations to uncover any new pools, combine to convince Canadian oil men they must turn their eyes to the West if they are to obtain relief from the ever-present problems presented by a dwindling domestic supply and an ever-increasing demand for petroleum and its products.

Nor is a cursory glance at the western situation any too reassuring. Starting with the intense boom of 1924, which did no more than secure a nominal production, the drills have been pounding away ever since, over wide areas and with more or less negative results in the plains area (Saskatchewan and the eastern part of Alberta) the scattered tests near Consul, Rush Lake, Unity, Monitor and Czar, have condemned large tracts of territory formerly considered as having a prospective value. The Peace River country, despite repeated endeavors, has failed to produce oil in quantity. The Athabaska tar sands are still an unsolved riddle, though inventive genius is hammering hard at the problem, and many processes for the recovery of the oil from these deposits are being tried out.

Sweetgras Area

Geological research has revealed the fact that the Sweetgrass area, brought into the limelight by its juxtaposition to the flourishing Kevin-Sunburst Field of Montana, offers quite a field for prospective drilling, for, although the tests on the main structure have been unproductive, there exist a number of local structures which possess sufficient interest to warrant their investigation by the drill.

In spite of these somewhat gloomy generalizations, indications are not lacking that a definite turn in the tide may be about to set in, the drilling in 1924 having been responsible for certain significant results which may be far-reaching in their effects.

Perhaps the greatest publicity has attended the efforts of the British Petroleums, Ltd., and others in the Wainwright area of Alberta. Attention was first directed to this district by the results of Imperial Oil's Fabyan No. 1 well, which developed a gas production of 14,000,000 feet and shows of heavy black oil. The second well of this company, however, was a dry hole, and since its completion the Imperial has not been active in the area.

British Petroleums commenced operations some 5 miles northeast of the Imperial location and has so far drilled four wells, while a fifth is being spudded in. The best results were obtained in No. 4, which has been flowing a small amount of oil since September. Its potential production is still unknown, as no pumping test has been made. The crude is somewhat similar to the heavy oils of California and its principal derivatives would be fuel oil, road oil and heavy lubricants. The gasoline content is notably low.

It is hoped further drilling will be successful in obtaining a higher grade of crude, and, in addition to the British Petroleums, the Maple Leaf Oil Co., the Western Consolidated Oil Co., the Wainwright Oil Producers Syndicate, and the Globe Drilling Oil Co. are active to this end.

The completion, as a dry hole, of the Imperial Oil's Red Coulee well and the failure of the McLean-Mitchell well to secure production on the Canadian continuation of the Sweetgrass arch, did much to dampen the ardor of the many companies and syndicates which had designed to test the area.

While these wells largely condemned the main structure there are certain minor folds which hold out a greater amount of promise, and on one of these was located the Rogers-Imperial well at Dead Horse Coulee, a joint drilling venture of the Imperial and the late Mark Rogers and associates of Lethbridge.

Dead Horse Coulee Well

At a depth of 2,525 feet the Dead Horse Coulee well encountered a gas flow of approximately 22,500,000 feet. The gas was dry and the flow was eventually mudded off to allow of the hole being carried deeper in search of oil. Casing trouble and the advent of bad weather led to a shut down, but it is expected work will be resumed in the spring.

Encouraged by the large gas flow in this well Imperial Oil has commenced a test further down the dip on the same

C. O. Stillman

structure, where, presumably, the gas would to a certain degree be avoided and a test of the lower horizons for oil be possible. A heavy rotary outfit is being used and the hole has reached a depth of 1,002 feet when the condition of the roads precluded the hauling of oil fuel from Coutts, and the well had to be temporarily shut down. Work will be recommenced as soon as conditions permit, and the results here will have an important bearing on the whole area, as a successful well would enhance the attractiveness of several similar structures and encourage further drilling.

Perhaps the most significant development of the year has been in the Turner Valley, where the Royalite Oil Co., an Imperial subsidiary, is carrying on the development of the original Dingman Field, the only success of the Calgary boom days.

There are four wells in the field, which yield, approximately, a total of 10,000,000 feet of wet gas per day, and a small quantity of very high-grade crude. This gas is treated in the up to date absorption plant of the Royalite company for the extraction of the gasoline content, and then piped to Calgary, where in the past winters it has afforded a timely relief to the city's growing needs.

The crude naphtha recovered by the Royalite, amounting to around 40,000 gallons per month, forms the major portion of Alberta's oil production, the remainder coming from other operators in the Dingman Field, and from Wainwright. No. 4 well of the Royalite, which has a gas production of some 6,000,000 feet at a depth of 3,185 feet was deepened this summer to test the lower horizon of the Turner Valley anticline. Drilling in this area is extremely difficult, owing to the steep dip of the beds and the character of the formations, but steady progress was made until the hole entered the Madison lime, a Mississippian formation never before penetrated by the drill in the foothills belt.

Still drilling in the lime, at 3,740 feet a flow of gas estimated at 1,500,000 feet was met with under a pressure which blew the tools up in the hole for a distance of 150 feet. During the fishing operations the gas flow steadily increased through the well drilling itself in, and no sooner were the tools released than they were again blow up into the 6-inch casing, with the fishing string on top of the drilling string and the well flowing wild.

Fire Hard to Subdue

An attempt to control the well was disastrous, as no sooner was the 3,000-pound valve closed than the pressure raised both the 6-inch and the 8-inch casing out of the hole, a dead weight of some 98 tons, until the control valve was thrust through the top of the derrick. The casing then collapsed back into the hole, temporarily shutting off the gas flow, which later on again broke through with renewed force and caught fire.

The fire burned for 11 days and was not subdued until seven boilers were on the location directing numerous streams of high pressure steam on the flames, which flared a hundred feet in the air and lighted the surrounding country for miles.

Extraordinary means had to be employed to shut in the well, which is gauged at 21,500,000 feet of wet gas per day, accompanied by an appreciable amount of light oil.

The fact that this well has tapped a new horizon, which is capable of producing such a large quantity of gas and has distinct possibilities for oil, is a most encouraging omen for future success in this vicinity and will undoubtedly lead to deeper drilling in certain areas which have been considered as condemned through failure to find production in the higher beds.

South from the Turner Valley, a well is being drilled by the Imperial, at Rice Creek, on a local structure where conditions appear promising. This well had reached a depth of 1,120 feet when operations were suspended for the winter.

The only other important test at present drilling in Alberta is the Imperial well at Coalspur, in the foothills west of Edmonton.

A previous well of the same interests was abandoned owing to drilling difficulties, but the present drilling is proceeding smoothly, and gives every promise of providing a deep test of the somewhat extensive structure on which it is located. The 10-inch casing has been set at 2,770 feet and the hole is now close on 3,000 feet. The possible oil horizons have not yet been reached, but a sufficiency of gas to use under the boiler has been met with in the sandy phases of the Colorado shales through which the well has passed. The Mackenzie River operations have for the past few years supplied that spice of romance which lifts an industrial development into the realm of high adventure, and this season has seen that feature further exemplified.

With little prospect of any immediate financial return, the gilt has worn off the Fort Norman gingerbread, and most of the claims which were staked on the strength of the Imperial gusher have been allowed to lapse.

Since its initial success, Imperial Oil has drilled four wells in the area, two of which were abandoned on account of drilling trouble, and the remaining two were dry holes. The potential area being thus restricted, Imperial decided on another test close to the discovery location, and a crew, under the direction of Angus Sutherland, was sent north on the first boat to carry this into effect and salvage as much of the material as possible from the previous failures.

Conditions were the reverse of favorable. The water in the river was exceptionally low; it was not found possible to hire additional help at Fort Norman, and the weather was bad; but despite these handicaps, the well was spudded in on August 4 and a 975-foot hole was drilled before operations had to be suspended to enable the crew to avail themselves of the last boat out.

Discovery No. 2 well is located about 150 feet east of No. 1, and at a higher elevation, so that, at the depth reached, the main producing horizon of the discovery well had not been tapped. Numerous occurrences of oil were noticed, the principal one being at 895 feet where the well made about 25 bbls. per day for a time.

The hole has been left in splendid shape for completion next summer, with 10-inch casing set at 935 feet and, considering the adverse conditions under which the crew labored, a remarkably fine piece of work was accomplished.

Angus Sutherland and his men had a hazardous journey before reaching Fort Smith, the boat on which they traveled being piled on one of the islands in Great Slave Lake during a heavy gale. In spite of these added excitements they are ready and keen to go back and finish the job next year.

We have thus reviewed the salient features of oil development in the West for the past season, and find them not without indications of better things in store.

The Gas Situation

Coming now to natural gas, we can record a year of steady progress and the uncovering of large potential supplies in localities where it is not, as yet, possible to take advantage of them.

We have already mentioned the Dingman Field, in the Turner Valley, and the Calgary supply is further safeguarded by the new wells of the Canadian Western Natural Gas Co. near Foremost. Complementary to these activities has been the laying of a new 10-inch pipe line, 36 miles long, to link up with the main line to Calgary.

Not to be outdone by its southern rival, Edmonton has at last brought in the gas from the Viking Field, and the whole city is rapidly becoming converted to this new source of heat and energy.

Medicine Hat has resorted to further drilling to augment its diminishing supply and encouraging results have been met with.

Among the areas where reserves have been proved for which there is no immediate outlet are Wainwright, where the British Petroleum, Grattan, Maple Leaf and Imperial wells have gas in varying amounts; Pouce Coupe, where Imperial has closed in a 10,000,000-foot gasser; Dead Horse Coulee, with its 22,500,000 feet in the Rogers-Imperial well, and the Royalite wells in the Turner Valley, which now produce more than can be accommodated in the existing pipe line to Calgary.

There has been talk of inaugurating the manufacture of carbon black from

(Continued on Page 172)

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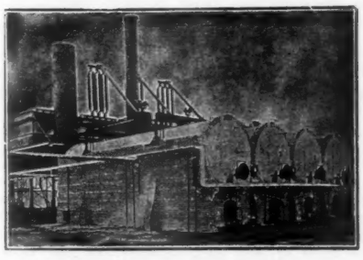

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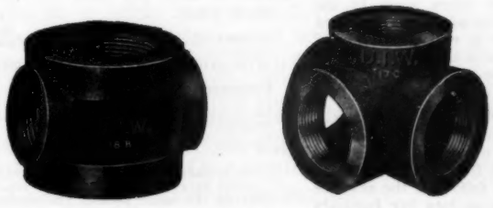

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Europe's Handicaps in Search for Oil

War, Lack of Money and Experienced Oil Men Account for Delay in Prospecting and Developing New Fields Abroad

By Staff Correspondent

PARIS, France, Jan. 15.—Among the lessons which the war taught European nations, was the essential part played by oil in the political, economical and industrial life of a modern nation. It becomes more and more evident that the problem of developing or increasing an independent oil supply is receiving ever growing attention. In fact, it may be said the time is slowly but surely coming when Europe, will be able to get from her own continent at least a part of her supply.

It has taken years of the most strenuous efforts and an immense amount of money to create the oil industry in America, and its greatest development has taken place during the last ten years, when Europe was in the throes of the most deadly of all wars, unable to spend even an infinitesimal part of the enormous amounts actually spent by American capitalists in prospecting and developing new oil territories.

Adding to this the entire lack of experienced personnel and modern drilling material, which had to be got from America, one is not to wonder why anything of importance could not have been done earlier in Europe concerning the production of oil.

Think of the amount of European money which had and has yet to be paid, in francs, lire, lei, marks of all nationalities and rubles, at the current rate of exchange, for the purchase of a single American oil drilling outfit. Think also of the salary which had to be paid in Europe to an American driller.

A lack of money much more than a lack of good will was undoubtedly the cause of at least a part of the European countries' delay in prospecting for and developing new oil fields.

However, a review of the various events which have taken place in the European oil industry since the beginning of 1924 will show a real progress and that increasing efforts are being made in various parts of the continent to try and achieve anxiously awaited results.

Rumania

Rumania is slowly but continuously overcoming the numerous difficulties which had resulted from the devastation of her oil territory following the advance of the German armies into her frontiers during the World War. Her crude oil production keeps increasing:

The principal companies participating in Rumania's oil production and their own production during the first period of nine months of 1923 and 1924 have been as follows:

	1st nine months (metric tons)	
	1923	1924
Astra Romana	310,448	344,214
Steaua Romana	165,752	199,214
Creditul Minier	114,828	164,324
Romano Americana	124,251	116,666
Phoenix Oil	82,408	113,828
I. R. D. P.	40,412	111,013
Colombia	72,506	49,756
Aquila Franco-Romana	10.660	43,745
Concordia	132,859	85,224
Victoria	2,168	11,090
Romana Petrolera	7,046	10,109
Prahova	2,081	6,429

This increase in production has taken place in spite of difficulties caused to the companies through the enactment of a new legislation consecutive to the vote by the Rumanian Congress of the new constitution in which was adopted the principle of the nationalization of all the mineral resources of greater Rumania.

The most objectionable part provider that concessions in State Lands can be granted only to enterprises constituted as Rumanian joint stock mining companies, with a majority of stock owned by Rumanian nationals, and allows a period of 10 years to all foreign controlled oil companies to become nationalized.

Existing foreign concerns have been able to obtain considerable results and ensue the development of the Rumanian oil industry, thanks to their investment of very large amounts in plant and machinery, means of transport, etc. Nationalization is practically impossible to enforce on account of Rumania's present financial situation, and one cannot really see where Rumania could find the thousands of millions which would be required to nationalize such large concerns as Astra Romana, Romano Americana, Aquila Franco Romana, etc.

Considering that while there are about 200,000 hectares of petroliferous land in Rumania, that, up to the present time, only about 30,000 hectares have been actually proved, and of this large acreage only about 10 per cent commercially developed, it cannot be doubted that Rumania's oil industry presents enormous possibilities for expansion. It is to be hoped, that the Rumanian Government will not act in such a way as to discourage the entrance of foreign capital, without which no further development is possible.

Poland

The Polish oil industry does not seem to recover from its past troubles as easily and rapidly as the Rumanian. Naturally it would not be quite justified to expect very extraordinary achievements from a country born only a few years ago and which was confronted with the immense task of creating its political as well as economical and industrial life at the same time. The Polish authorities are doing their utmost to develop their national oil industry.

According to latest published figures, Poland's production during the first six months of 1924, compared to the same period of 1923 has been as follows: (metric tons).

District	Gross Production	Net Production
Jaslo—		
1924	28,907	27,369
1923	27,885	26,216
Drohobycz—		
1924	338,046	276,385
1923	317,990	266,272
Stanislavow—		
1924	20,377	20,022
1923	13,206	12,879
Total 1924	387,330	323,776
Total 1923	359,081	305,367

During the same period, the production of the principal oil fields has been the following:

	1st six months	
	1924 Tons	1923 Tons
Tustanowice	124,963	126,334
Borysław	119,646	102,388
Mraznica	55,371	51,072
Bitkow	18,134	10,973
Shodnica	15,322	15,466
Wankowa	8,719	8,691
Potok	6,799	5,577
Rypne	5,403	4,551

As can be seen, Poland's oil production is slightly increasing and this in spite of the fact that the country is now suffering from an industrial and trade crisis caused by the stabilization of her currency, which obliged the oil producing firms to restrict their drilling work, through lack of funds.

Refining in Poland

During the first six months of 1924 and 1923, the refining branch of the Polish oil industry has produced the following material:

	1st six months	
	1924 Tons	1923 Tons
Crude oil treated	347,400	313,779
Gasoline	43,226	40,530
Kerosene	95,784	94,399
Gas oil	57,654	51,466
Lubricants	61,316	48,391
Paraffin	17,819	13,933
Candles	237	603
Vaseline	273	199
Macadam	3,520	7,604
Coke	4,122	2,974
Half products	29,936	29,638
Solid lubricants	381	282
Total	311,272	290,019

During the same periods the quantities exported to the various countries, mostly central European States, were as follows:

	1st six months	
	1924 Tons	1923 Tons
Czecho Slovakia	52,153	29,042
Germany	49,454	41,795
Austria	27,586	24,483
Dantzig Free State	33,186	22,106
Hungary	10,803	10,543
Switzerland	7,364	8,950
France	1,460	2,940
Yougo Slavia	493	766
Rumania	761	540
Denmark	1,051	513
Great Britain	845	462
Russia	860	385
Italy	289	110
Other countries	222	432
Total	186,527	153,061

France

Up to the end of 1923, France's only oil production was coming from the oil fields of Pechelbronn. Since the beginning of the present year new and quite interesting events have taken place which may well lead to the belief that France is the fortunate owner of oil resources.

From two wells drilled in central France, in the Department of Auvergne, enough gas is produced to supply the neighboring city of Amberieu. It is claimed also steps are being taken to transport by pipe line the gas produced from these wells as far as the city of Lyons where it will be used for lighting and heating.

However, the two most important events have certainly been the recent discovery of two oil producing zones located along the foothills of the Pyrenees, not far from the Mediterranean Sea and the Atlantic coasts.

The discovery of a commercial oil horizon at Gabian, a village a few miles southwest of the city of Montpellier, not far from the Mediterranean coast, is to be credited to the French Petroleum Department, which controlled the prospecting and drilling work with the help of the recently organized "Comite Scientifique" composed of well known oil geologists and scientists.

At the beginning of September the well struck an oil sand at the depth of about 90 meters, and produced about three barrels a day. The management decided to deepen the well, and, at the beginning of November, it reported the drill had struck a new oil horizon which produced at the rate of one cubic meter (about 7 barrels) per hour. The well has kept producing at the same rate since. The oil is very light and highly paraffinous. Its specific gravity is about .0840, but contrary to what might be expected, its percentage in light products is rather small.

Another oil discovery was also reported by a private company, a few weeks ago, at Castagnede de Bearn, near the Pyrennean foothills, not far from the Atlantic coast. On account of water trouble it has not yet been possible to ascertain its exact value. One fact remains, the discovery since the beginning of 1924 of oil in two distinct and far apart points of southern France.

Pechelbronn's oil production during recent years has been as follows:

	Met. Tons
1913	49,584
1914	47,255
1920	54,900
1921	55,565
1922	70,110
1923	70,750
1924 (six months)	40,000

The French Government is very anxious to develop a national oil industry. To encourage private enterprises desirous to try and locate oil horizons in the French metropolitan territory, the Minister of Finance has decided, with the consent of the Ministers of Commerce and Public Works, to ask the French Parliament to vote a law exempting all oil prospectors and discoverers from the taxes imposed by the existing mineral law, during a period of 10 years.

Germany

Domestic production of petroleum in Germany, estimated at 45,000 tons in 1922, increased by about 5 to 10,000 tons in 1923 as a result of new successful drilling in Hanover.

The 1924 production will certainly be much more important. A new well drilled near Nieuhagen, Hanover, was reported, at the beginning of May, 1924, as having struck oil at the depth of 765 meters. This was claimed to be the really first deep well ever drilled in Germany. Its production is said to be about 100 tons (700 bbls.) per day. The oil is very heavy and fit only for the manufacture of lubricating oils.

It has been reported also that oil has been discovered in the region of Auras and Sehorbus (lower Silesia.) Wildcat drillings are said to have given quite satisfactory results, as a well drilled at a depth of 423 meters has produced oil gushing to a height of 5 or 6 meters above the surface.

An oil discovery has also been claimed in the region of Stralsund (Pomerania.)

Other Countries

Very interesting efforts are being made in Spain and Italy to discover new oil fields. The Italian Government signed, at the end of April, a contract with the Sinclair interests, by which a prospecting permit was granted over areas in the Provinces of Emilia and Sicily. The duration is 50 years, during which the Sinclair interests have agreed to spend very large amounts in exploration and development work.

Spain is offering very encouraging terms to private oil prospectors, national or foreign.

It has been reported that oil beds had been discovered in upper Austria, in the neighborhood of Voecklabruck; in Bulgaria, in the Maritza Valley; in Holland, in a district between Lichtenvoorde and Winterswyk, and in Norway, near Christiana, but no striking developments seem to have taken place.

As to Czecho-Slovakia, its production, about 10,000 tons, seems to have rather decreased in 1924, in spite of the efforts of the Government to develop all the possible oil resources of the country.

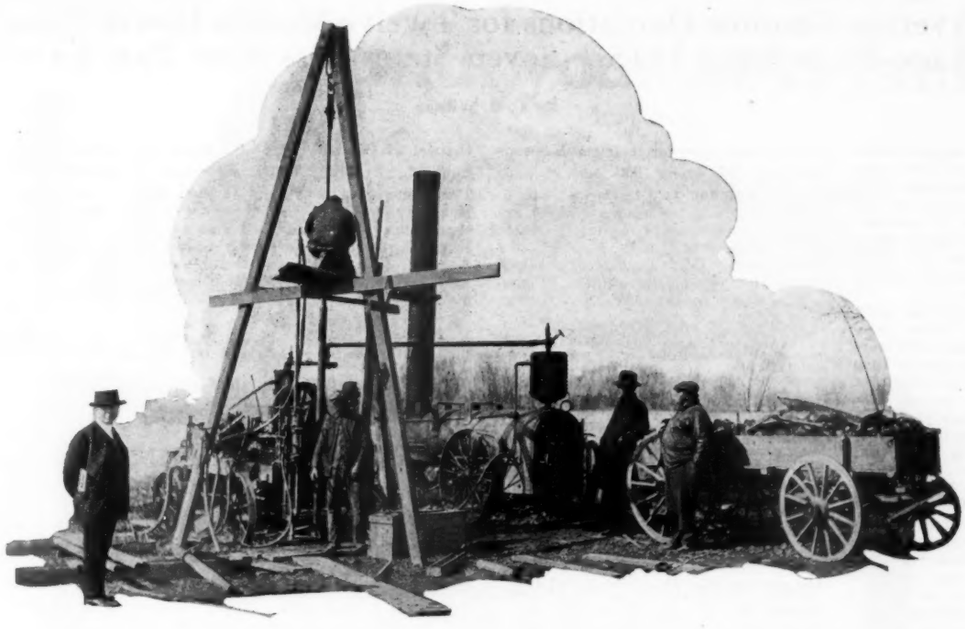
IMPERIAL PRESIDENT ON CANADIAN WEST

(Continued From Page 170)

these surplus gassers, and some drilling has been undertaken for the express purpose of tapping gas supplies with this end in view. The time, however, is not propitious for any such venture, as the market is at present glutted with the United States product, and the prevailing prices would not give adequate return.

A governmental survey of the western gases, undertaken primarily to determine their helium content, has not only demonstrated that this element is present in only extremely small percentages, but has relegated most of the gases to the methane column. As the recoverable quantity of carbon black is governed by the methane content of the gas this factor would also enter into the question of carbon black manufacture becoming a financial success.

Taken all in all, the year just closed has, without giving excuse for undue optimism, been productive of certain features which tend to remove the pursuit of the elusive petroleum in western Canada from the purely speculative stage and place it on the surer foundation of ascertained fact.



Answering the Big Question

RUMORS that the domestic oil supply will, on its present basis, last only a few years gives urgency to the need for locating some of the deposits which undoubtedly await only the drill of the prospector.

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Tank Wagon Prices Lower During 1924

Average Gasoline Quotations for Twelve Months Lower Than Any Year Since 1915. Seven States Pass New Tax Laws

By C. O. Willson

Average gasoline tank wagon prices throughout the United States were lower during 1924 than any previous year since 1915. In regard to retail or service station quotations consumers of gasoline, despite the increases in gasoline taxes, purchased their motor fuel at lower prices than for any 12-month period during the past eight years.

As shown in the accompanying table, based on 50 representative cities, gasoline tank wagon prices during 1924 were substantially lower at most points than 1923, which was another period of exceptionally low gasoline prices. The table shows that the average high tank wagon price during 1924 for the 50 cities was 18.99 cents per gallon which was 2.72 cents lower than the 21.71-cent figure, which was the high average for 1923. The average low price for the 50 points was 13.27 cents in 1924 which was .38 cents lower than the average low price of the previous year. In brief, tank wagon prices last year did not advance to as high levels as they did in 1923 and they slumped slightly lower. This high and low difference for the two years totals 3.1 cents per gallon.

Graph Shows Lower Prices

This fact of lower prices during 1924 is also clearly shown in the graph which is based on average tank wagon prices at the 50 cities given in the table. The graph gives the average price on the first day of the month during 1923 and 1924, including the January 1 price for this year. The yearly average derived from the monthly averages is 16.72 cents per gallon for 1924 and 18.43 cents for 1923. This indicates an average reduction of 1.71 cents per gallon during 1924 under 1923.

Consumers of gasoline did not get the benefit of these lower tank wagon prices during 1924 in all areas due to the fact that additional State Legislatures enacted laws providing for a direct tax which in all instances is added to the tank wagon and service station prices.

The increasing importance of these taxes is clearly shown in the table. On January 1, 1923, the average of this tax for the 50 cities was less than ½-cent a gallon. The exact figure was .49 cents per gallon. By January 1, 1924, this average had increased to 1.31 cents per gallon. This average continued to climb during 1924 so that on the first day of this year the tax had increased to 1.76 cents per gallon. In several States during the past year this increase in tax has more than offset the decline in tank wagon prices, so the consumers were forced to pay more for their gasoline supplies than they did in 1923.

Gasoline Tax Increases

Following are the changes which occurred in gasoline taxes during 1924: Maryland increased from 1 to 2 cents on January 1, 1924; Oklahoma increased from 1 to 2½ cents, March 10; Mississippi increased from 1 to 3 cents, May 9; District of Columbia, tax of 2 cents became effective May 23; Delaware, tax of 1 cent increased to 2 cents January 19; Kentucky, tax of 1 cent increased to 3 cents, June 11 and the Louisiana tax of 1 cent was advanced to 2 cents on August 1. In addition to these changes which occurred during 1924, a 2-cent tax became effective January 1, 1925 in Missouri. Several cities and towns passed ordinances providing for a tax but it so happened that none of these taxes applied to the 50 cities given in the table.

The year 1925 opens with further increases in gasoline taxes assured. In practically every State where the Legislature is now in session bills have been introduced providing for a tax varying

CHICAGO TANK WAGON

Following are the daily average tank wagon prices at Chicago for the past 12 years:

1913	14.84c
1914	12.07c
1915	11.04c
1916	17.16c
1917	20.03c
1918	22.27c
1919	22.15c
1920	25.45c
1921	20.28c
1922	20.23c
1923	17.05c
1924	14.68c

Note: Average prices were compiled by the Western Petroleum Refiners Association with exception of 1924.

Table showing gasoline tank wagon prices in effect January 1, 1924, exclusive of taxes, in 50 representative cities, with amount and date of all changes during the year. Also the high and low prices of 1923 and 1924 with gasoline taxes in effect January 1, 1923, 1924 and 1925.

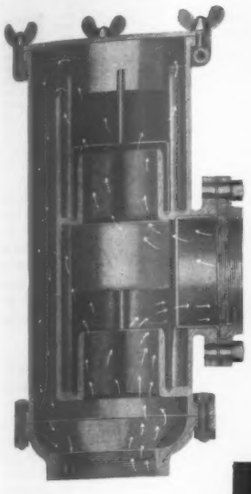
	1/1	1/17	1/12	2/2	6/21	8/13	10/1					High and Low Prices —1924—		High and Low Prices —1923—		Taxes Jan. 1	Taxes Jan. 1	Taxes Jan. 1
Birmingham, Ala.	14.0	16.0	18.0	20.0	18.0	17.0	13.0					20.0	13.0	20.0	14.0	2.0	2.0	1.0
	1/1	1/22	2/5	10/28														
Phoenix, Ariz.	16.0	18.0	20.0	18.0								20.0	16.0	22.5	17.5	3.0	3.0	1.0
	1/1	1/19	1/30	7/15	9/19	10/1												
Little Rock, Ark.	13.0	16.0	18.0	16.0	15.0	13.0						18.0	13.0	20.5	12.5	4.0	4.0	1.0
	1/1	1/22	2/5	10/28														
San Francisco, Cal.	11.0	13.0	15.0	13.0								15.0	11.0	19.0	12.0	2.0	2.0	...
	1/1	1/14	1/24	2/7	6/11	6/30	8/4	9/15	11/14									
Denver, Colo.	14.0	16.0	17.0	19.0	17.0	16.0	15.0	14.0	12.0			19.0	12.0	20.0	11.0	2.0	2.0	1.0
	1/1	1/19	1/29	8/25	9/19	9/30	10/1	11/1	11/22									
Hartford, Conn.	16.5	17.5	20.0	19.0	18.0	17.0	13.0	14.0	15.0			20.0	13.0	24.5	15.5	1.0	1.0	1.0
	1/1	1/15	1/19	1/28	2/9	7/14	7/21	9/19	10/1	12/2								
Dover, Del.	14.0	16.0	17.0	19.0	20.0	19.0	18.0	17.0	14.0	15.0		20.0	14.0	23.0	14.0	2.0	1.0	...
	1/1	1/17	1/22	2/2	6/21	7/13	10/1											
Jacksonville, Fla.	13.0	15.0	17.0	19.0	17.0	16.0	12.0					19.0	12.0	20.0	13.0	3.0	3.0	1.0
	1/1	1/17	1/22	2/2	2/13	6/21	7/13	10/1										
Atlanta, Ga.	11.0	13.0	15.0	17.0	19.0	17.0	16.0	14.0				19.0	11.0	22.0	13.0	3.0	3.0	1.0
	1/1	1/26	2/8	8/4	9/15	10/13												
Boise, Idaho	18.0	20.5	22.5	21.5	20.5	19.5						22.5	18.0	24.0	18.0	2.0	2.0	...
	1/1	1/12	2/5	7/18	7/30	8/26	9/12	10/11										
Peoria, Ill.	14.2	16.2	18.2	17.2	16.2	13.0	13.2	13.0				18.2	13.0	20.8	12.2	...	...	...
	1/1	1/12	2/5	3/8	7/30	9/12												
†Chicago, Ill.	14.0	16.0	18.0	16.25	14.25	13.0						18.0	13.0	20.0	12.0	...	...	...
	1/1	1/12	2/5	7/18	7/30	9/12												
Indianapolis, Ind.	14.2	16.2	18.2	17.2	16.2	13.2						18.2	13.2	20.8	12.2	2.0	2.0	...
	1/1	1/12	2/5	5/31	6/10	7/30	9/12											
Des Moines, Iowa	14.5	16.5	18.5	17.5	16.0	14.5	13.5					18.5	13.5	21.1	12.5	...	...	...
	1/1	1/12	2/5	6/16	7/30	8/11	9/12											
Wichita, Kans.	13.8	15.8	17.8	15.3	14.3	13.0	12.8					17.8	12.8	20.4	11.8	...	...	...
	1/1	1/17	1/22	2/2	6/26	7/5	7/28											
Louisville, Ky.	13.0	15.0	17.0	19.0	17.0	16.0	12.0					19.0	12.0	21.0	13.0	3.0	1.0	1.0
	1/1	1/14	1/18	1/28	6/20	9/26	10/1											
New Orleans, La.	11.5	12.5	14.5	16.5	13.5	12.5	11.5					16.5	11.5	19.5	10.5	2.0	1.0	1.0
	1/1	1/15	1/29	7/15	8/25	9/19	9/30	10/1	11/1	11/22								
Augusta, Maine	14.5	16.5	19.0	18.0	17.0	16.0	15.0	13.0	14.0	15.0		19.0	13.0	24.5	15.5	1.0	1.0	...
	1/1	1/14	1/28	7/12	7/19	9/19	9/30	10/1										
Baltimore, Md.	15.0	17.0	19.0	18.0	17.0	16.0	16.0	13.0				19.0	13.0	22.5	15.0	2.0	2.0	1.0
	1/1	1/13	1/29	7/15	8/25	9/19	9/30	10/1	11/1	11/22								
Springfield, Mass.	14.5	16.5	17.5	20.0	19.0	18.0	17.0	16.0	13.0	14.0	15.0	20.0	13.0	24.5	14.5	...	...	...
	1/1	1/12	2/5	7/18	7/30	9/12												
Detroit, Mich.	14.8	16.8	18.8	17.8	16.8	13.8						18.8	13.8	21.8	13.2	...	...	...
	1/1	1/12	2/5	7/18	7/30	9/12												
Duluth, Minn.	15.2	17.2	19.2	18.2	17.2	14.5						19.2	14.5	21.5	12.9	...	...	...
	1/1	1/17	1/22	2/2	6/21	7/17	8/13	10/1										
Natchez, Miss.	12.5	15.5	17.5	18.5	16.5	15.5	14.5	11.5				18.5	11.5	20.0	12.5	2.0	1.0	1.0
	1/1	1/12	2/5	5/31	6/10	6/28	9/12											
*Kansas City, Mo.	13.9	15.9	17.9	15.9	14.9	11.9	12.9					17.9	11.9	19.5	10.9	2.0	1.0	...
	1/1	1/14	2/8	6/3	8/4	9/15												
Great Falls, Mont.	19.0	21.0	23.0	21.0	20.0	18.0						23.0	18.0	23.5	18.0	2.0	2.0	1.0
	1/1	1/12	2/6	5/20	6/4	7/30												
Omaha, Neb.	14.25	16.25	18.25	15.0	13.0	11.0						18.25	11.0	20.5	12.25	...	...	...
	1/1	1/22	2/5	10/28														
Reno, Nev.	14.5	16.5	18.5	16.5								18.5	14.5	22.5	15.5	2.0	2.0	...
	1/1	1/14	1/28	7/12	7/19	9/19	9/30	10/1										
Newark, N. J.	15.5	17.5	19.5	18.5	17.5	16.5	15.5	13.5				19.5	13.5	23.5	15.5	...	...	...
	1/1	1/9	1/14	1/25	2/8	6/9	7/15	7/26	9/30	12/8								
Albuquerque, N. M.	18.0	19.0	20.0	21.0	23.0	21.0	20.0	19.0	18.0	19.5		23.0	18.0	25.5	17.0	1.0	1.0	1.0
	1/1	1/15	1/29	7/15	8/25	9/19	9/30	10/1	11/1									
New York, N. Y.	15.5	17.5	20.0	19.0	18.0	17.0	16.0	14.0	15.0			20.0	14.0	24.5	15.5	...	...	...
	1/1	1/14	1/23	7/12	7/19	9/19	9/30	10/1										
Charlotte, N. C.	15.0	17.0	19.0	18.0	17.0	16.0	15.0	12.0				19.0	12.0	21.5	15.0	3.0	3.0	1.0
	1/1	1/12	1/14	2/5	6/12	7/18	7/26	9/12	9/17									
Fargo, N. D.	15.6	18.9	17.6	19.6	17.8	16.8	15.3	15.9	14.9			19.6	14.9	24.3	13.6	1.0	1.0	...
	1/1	1/12	1/21	2/4	6/23	7/23	8/10	8/16										
Cleveland, Ohio	16.0	17.0	18.5	20.0	19.0	17.0	16.0	15.0				20.0	15.0	21.0	16.0	...	...	...
	1/1	1/9	1/15	1/17	2/8	6/19	7/18	9/19	11/22	12/3								
Tulsa, Okla.	12.0	14.0	16.0	16.0	18.0	13.5	10.5	9.5	11.5	9.5		18.0	9.5	20.0	8.0	3.5	1.0	...
	1/1	1/22	2/5	10/28														
Portland, Ore.	12.0	14.0	16.0	13.0								16.0	12.0	20.0	13.0	3.0	3.0	2.0
	1/1	1/15	1/19	1/28	2/9	7/14	7/21	9/20	10/8	12/2								
Philadelphia, Pa.	14.0	15.0	17.0	19.0	20.0	19.0	18.0	17.0	14.0	15.0		20.0	14.0	23.0	14.0	2.0	2.0	1.0
	1/1	1/19	1/29	8/25	9/19	9/20	10/1	11/1	11/22									
Providence, R. I.	15.5	17.5	20.0	19.0	18.0	17.0	13.0	14.0	15.0			20.0	13.0	24.5	15.5	...	...	...
	1/1	1/14	1/23	7/12	7/19	9/19	9/30	10/1										
Charleston, S. C.	15.0	17.0	19.0	18.0	17.5	16.5	15.5	12.5				19.0	12.5	22.0	15.0	3.0	2.0	2.0
	1/1	1/9	2/5	7/18	7/30	9/12												
Huron, S. D.	16.0	18.0	20.0	19.0	18.0	15.0						20.0	15.0	22.6	14.0	2.0	2.0	1.0
	1/1	1/14	1/18	1/28	2/14	2/18	2/23	3/7	9/9	10/1								
Memphis, Tenn.	12.0	14.0	16.0	18.0	16.0	14.0	16.0	14.0	13.0	12.0		18.0	12.0	20.0	12.0	2.0	2.0	1.0
	1/1	1/4	1/15	1/29	2/5	3/6	5/17	6/28	8/3	10/8	12/8							
Dallas, Texas	11.0	13.0	14.0	16.0	13.0	17.0	16.0	13.0	11.0	9.0	10.0	17.0	9.0	19.0	6.0	1.0	1.0	1.0
	1/1	1/14	1/26	2/8	7/25	8/4	9/15											
Salt Lake City, Utah	16.5	18.5	19.5	21.5	20.5	19.5	17.5					21.5	16.5	23.0	15.5	2.5	2.5	...
	1/1	1/15	1/23	7/15	8/25	9/19	9/30	10/1	11/1	11/22								
Burlington, Vt.	14.5	16.5	19.0	18.0	17.0	16.0	15.0	13.0	14.0	15.0		19.0	13.0	24.5	15.5	1.0	1.0	...
	1/1	1/14	1/23	1/28	7/12	7/19	9/19	9/30	10/1									
Norfolk, Va.	15.0	17.5	18.0	19.0	18.0	17.5	16.5	15.5	14.5			19.0	14.5	21.5	15.0	3.0	3.0	...
	1/1	1/14	1/28	7/12	7/19	9/19	9/30	10/1										
Washington, D. C.	15.0	17.0	19.0	18.0	17.0	16.0	15.0	14.0				19.0	14.0	23.0	15.0	2.0	...	...
	1/1	1/14	1/23	1/28	7/12	7/19	9/19	9/30	10/1									
Charleston, W. Va.	16.0	17.0	18.0	19.0	18.0	17.0	16.0	15.0	14.0			19.0	14.0	23.0	15.0	2.0	2.0	...
	1/1	1/12	2/5	6/2	7/18	9/12												
Milwaukee, Wis.	14.0	16.1	18.1	16.1	15.0	13.1						18.1	13.1	19.6	13.0	...	...	...
	1/1	1/14	1/24	2/7	6/11	6/30	8/4	9/15										
Casper, Wyo.	14.0	16.0	17.0	19.0	17.0	16.0	15.0	14.0				19.0	14.0	18.0	13.0	1.0	1.0	...
	1/1	1/22	2/5	10/28														
Seattle, Wash.	12.0	14.0	16.0	13.0								16.0	12.0	20.0	13.0	2.0	2.0	1.0
	1/1	1/12	2/5	5/30	6/7	6/15	6/28	9/12										
Minneapolis, Minn.	14.9	16.9	18.9	16.0	14.0	13.0	12.0	14.2				18.9	12.0	....	....	....	....	....
Average price												18.99	13.27	21.71	13.65	1.76	1.31	.49

Note—Changes given in the above table were made by the several Standard companies in the sections in which they operate.

*The tax in Missouri is 2 cents. The remainder of the tax at Kansas City is city tax.

†During a greater part of 1924 the Standard Oil Co. of Indiana maintained a sliding scale of prices at Chicago. In the above table, changes based on the low price are given. Following are the complete price schedules, starting March 6, when the first price distinction was made in large and small dumps:

March 6—	April 3—	May 23—	July 17—	September 12—
1 to 100 gallons..18c	1 to 99 gallons..18c	1 to 99 gallons..15¼c	1 to 99 gallons..15¼c	1 to 99 gallons 18c
101 to 249 gallons..16c	100 to 199 gallons..16c	100 or more gallons.18c	100 or more gallons.17c	100 or more gallons.16c
250 to 499 gallons..15½c	200 or more gallons.15¼c			
500 or more gallons.15¼c				



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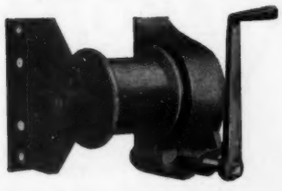

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WESTCOTT & GREIS

OIL FIELD SPECIALTIES

in amounts from 1 to 5 cents. Determine efforts are being made to make the tax effective in Ohio, Illinois, Wisconsin and several other important gasoline consuming States which up to the present time have not had a tax. Several States which have had a tax of from 1 to 3 cents for some time are planning on increasing the rate.

Same Trend as in 1923

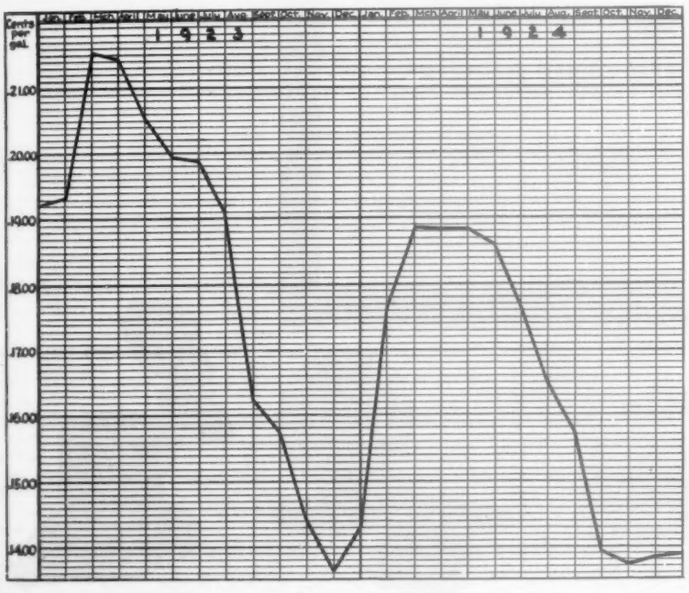
As in the case of the refinery gasoline market and the posted crude schedules the month to month trend in gasoline tank wagon prices resembled that of 1923. Reflecting the higher crude oil and gasoline refinery prices tank wagon quotations as established by the major marketing companies advanced rapidly early in the year. Average prices were higher in January than during the last month of 1923 and continued to climb through February, the peak for the year being reached on March 1 when the average for the 50 cities was 18.87 cents per gallon. There was little change during March and April, the average on April 1 and May 1 being 18.85 cents per gallon.

By May a weak crude and refinery gasoline market was reflected in scattered tank wagon reductions, some of which applied to the cities carried in the table. By June 1 this had brought a decrease in the average price to 18.61 cents. From that time "price wars" and general reductions affecting large marketing areas brought a steady decline in average prices which continued to November 1 when the low average of the year—13.73 cents—was obtained. Due to improvement in the crude and refinery market scattered advances in tank wagon quotations materialized in November. On December 1 the average price was 13.87 cents and on the opening day of the new year the average was 13.9 cents.

Thus the marketing end of the oil industry during 1924 practically duplicated the developments of 1923 with advancing prices during the season of minimum consumption with a downward price trend beginning in the early summer and ending at the close of the period of maximum consumption.

Local price wars developed early in 1924 and during the summer months before the general reductions were announced wholesale and retail markets were even more demoralized in some areas than during 1923. This as previously indicated, was due to the ability of independent jobbing interests to purchase distress material from refiners who were willing to dispose of their surplus regardless of cost of production.

In some areas the major marketing interests adopted the policy of meeting these local conditions with local remedies. They lowered their prices whenever necessary at any particular point but made no general reduction until later in the year. Toward the end of the year the general reductions brought tank wagon prices to a level where the local price wars practically ceased.



Graph showing average gasoline tank wagon prices exclusive of tax at 50 representative cities on the first day of each month during 1923 and 1924 and January 1, 1925.

Average gasoline tank wagon prices on the first day of each month exclusive of tax were as follows: 1923, 19.21 cents, January 1; 19.33 cents, February 1; 21.53 cents, March 1; 21.46 cents, April 1; 20.56 cents, May 1; 19.95 cents, June 1; 19.89 cents, July 1; 19.11 cents, Augusts 1; 16.24 cents, September 1; 15.77 cents, October 1; 14.45 cents, November 1; 13.66 cents, December 1. 1924, 14.32 cents, January 1; 17.68 cents, February 1; 18.87 cents, March 1; 18.85 cents, April 1; 18.85 cents, May 1; 18.61 cents, June 1; 17.66 cents, July 1; 16.5 cents, August 1; 15.75 cents, September 1; 13.95 cents, October 1; 13.75 cents, November 1; 13.87 cents, December 1; 13.9 cents, January 1, 1925.

RECEIPTS AT ATLANTIC PORTS EQUAL 21 PER CENT U. S.-MEXICO OUTPUT

By N. O. Fanning

NEW YORK, Jan. 26.—Receipts of crude and refined oil at Atlantic Coast ports by water during 1924 are estimated at 179,981,000 bbls., a daily average of 491,000 bbls. Receipts of American oil from Gulf and Pacific ports aggregated approximately 138,792,000 bbls., while imports aggregated 41,189,000 bbls. Of the imports, 38,308,000 bbls. came from Mexico and 2,881,000 bbls. from other countries, comprising Peru, Venezuela and Trinidad with contribution of about equal amounts.

Total receipts are equal approximately to 21 per cent of the combined production of both the United States and Mexico during 1924. This alone indicates the importance of the Atlantic Coast markets, which receive only a part of their oil by water, the remainder being shipped from western fields by pipe line and tank cars.

The amount of oil received from Gulf and Pacific ports combined during 1924 was equivalent to about 19 per cent of the production of crude in the United States during that year. The amount received from Mexico was equal to about 28 per cent of that country's estimated output.

Estimating receipts of oil in States east of the Appalachian Mountains by pipe line and tank car at 300,000 bbls. daily, of 109,000,000 bbls. for the year, the area in question is shown to consume approximately 289,000,000 bbls. of oil annually.

Receipts by water from the Gulf Coast during 1924 amounted to 93,947,000 bbls. or about 52 per cent of the total receipts. Receipts from California were 44,845,000 bbls., or 25 per cent of the whole. Imports of 41,189,000 represented 23 per cent.

Gulf Receipts Gain

Receipts from the Gulf Coast began the year at the rate of about 5,000,000 bbls. monthly, but increased to a maximum of 9,872,000 bbls. in July, and ended with 9,487,000 bbls. in December. At the same time, receipts from California, which averaged a little more than 5,000,000 bbls. a month in the first two months of 1924, dropped off to an average of approximately 2,500,000 bbls., a drop of 50 per cent. Imports fluctuated between approximately 2,500,000 and 4,500,000 bbls. a month, showing no definite trend either way.

Total receipts from all sources increased from 11,985,000 bbls. in January to a peak of 17,336,000 bbls. in June, and in December aggregated 14,780,000 bbls.

One feature at the close of the year was the increase in receipts from the Gulf Coast, and the trend is strongly toward a further gain during 1925. Special significance of this trend is the recognition by most of the big oil companies which desire to invade the eastern markets of the cheapness of water transportation. The Humble, Sinclair, Pure Oil and several other big marketers completed shipping facilities on the Gulf Coast during 1924, and most of the others enlarged facilities they had to start with.

Atlantic Coast Receipts

The following table shows estimated receipts of crude and refined oil by water at Atlantic ports by months during 1924, from the three chief sources (figures in barrels):

	Gulf Coast	Pacific Coast	Imports	Total
December	9,487,000	2,504,000	2,589,000	14,780,000
November	7,483,000	3,397,000	4,540,000	14,420,000
October	7,698,000	3,749,000	2,713,000	14,160,000
September	8,222,000	3,105,000	3,047,000	14,374,000
August	9,667,000	3,923,000	2,591,000	16,181,000
July	9,872,000	2,648,000	3,593,000	16,113,000
June	9,194,000	3,963,000	4,179,000	17,336,000
May	8,530,000	3,829,000	4,428,000	16,787,000
April	7,878,000	4,323,000	3,729,000	15,930,000
March	6,271,000	4,255,000	4,059,000	14,585,000
February	5,066,000	5,111,000	3,163,000	13,330,000
January	4,579,000	4,938,000	2,468,000	11,985,000
Total	93,947,000	44,845,000	41,189,000	179,981,000
Daily average	256,000	123,000	112,000	491,000

It is expected by leading oil men here that receipts from California during 1925 will be cut in half as compared with those for 1924. The trend of receipts from the Gulf Coast and imports they refuse to gauge, however.

Houston Big Shipper

The rapid development of the Houston ship channel as an oil shipping point is reflected in increased receipts at Atlantic ports from that area. During December 4,331,000 bbls. of crude and refined oil were received from this district, a daily average of about 139,000 bbls., and the largest on record for any single month. In January, 1924, only 686,000 bbls. came from Houston, Texas City and other ports of the district, combined, and in February only 1,226,000 bbls.

The following table shows receipts from the Gulf Coast by months, giving the three districts separate: (In barrels):

	New Orleans	Port Arthur	Houston
December	1,995,000	5,161,000	4,331,000
November	1,432,000	3,198,000	2,853,000
October	1,867,000	3,118,000	2,713,000
September	1,897,000	3,854,000	2,471,000
August	3,286,000	3,678,000	2,703,000
July	3,390,000	4,470,000	2,012,000
June	2,065,000	4,037,000	3,092,000
May	1,481,000	3,879,000	3,170,000
April	1,236,000	4,229,000	2,413,000
March	533,000	3,425,000	2,313,000
February	533,000	3,307,000	1,226,000
January	554,000	3,329,000	686,000
Total	19,269,000	43,695,000	30,983,000
Daily aver.	53,000	119,000	84,000

The New Orleans district includes Baton Rouge. Port Arthur district includes Sabine and Beaumont. Houston area includes Texas City, Sinco, Baytown and Galveston. There are a few scattered shipments from Port Aransas included under Houston which were too small to be given separately.

Receipts in Company Ships

Many companies which bring in oil by water at Atlantic ports do so in vessels chartered from other oil or shipping concerns. As shipments are compiled from arriving vessels it is impossible to state arbitrarily to whom the oil belongs that comes in. The following table, however, shows arrivals classified as to ownership of the vessels in which the oil enters port, and also by principal sources (in barrels):

	Gulf Coast	Pacific Coast	Imports	Total
Standard of New Jersey	23,239,000	15,059,000	7,440,000	45,738,000
Pan-American Petroleum	3,364,000	1,218,000	14,072,000	18,654,000
Gulf Refining	15,282,000	.....	290,000	15,572,000
The Texas Co.	9,708,000	76,000	1,359,000	11,143,000
Atlantic Refining	7,618,000	2,383,000	172,000	10,074,000
Atlantic Gulf Oil	616,000	7,171,000	1,584,000	9,371,000
Standard of New York	5,293,000	2,397,000	1,174,000	8,464,000
Sun Oil	6,988,000	1,886,000	102,000	8,976,000
Vacuum Oil	4,403,000	658,000	113,000	5,174,000
Miscellaneous	17,536,000	13,397,000	14,883,000	45,815,000
Total	93,947,000	44,845,000	41,189,000	179,981,000

The Standard Oil Co. of New Jersey vessels are credited with the largest receipts, 45,738,000 bbls.; also the largest from the Gulf Coast and the Pacific Coast. Pan-American Petroleum & Transport comes second with total receipts of 18,654,000 bbls., and its imports, 14,072,000 bbls. are by far the greatest of any company. Standard of New Jersey ranks second, importing 7,440,000 bbls.

The Gulf Refining Co. ranks second in receipts from the Gulf, which aggregated 15,282,000 bbls. The Texas Co. was third with 9,708,000 bbls. Gulf Refining figures are interesting, as this company has no refineries on the Atlantic seaboard. This company probably is the largest shipper of refined petroleum by water to Atlantic Seaboard ports.

OIL SITUATION SOUND SAYS LAGO PRESIDENT

NEW YORK, Jan. 24.—"The oil situation is in a very sound condition," said Sir James Currie, director of the British-Mexican Petroleum Co., and president of the Lago Petroleum Co.

"British-Mexican Petroleum is handling the bulk of the Atlantic bunkering trade. We are also doing a fair marketing business and pumps are gradually replacing cans in the marketing of gasoline.

"Lago Petroleum's production is being hampered by lack of adequate transportation facilities. Lago production, according to the last available information that I had, was running about 10,000 bbls. daily."

BARNSDALL PLANT CHANGES

W. F. Dieterman has been made assistant superintendent of the Barnsdall Refining Co.'s plant at Barnsdall, Okla. W. C. Coffey, who formerly held that position, resigned to enter the employ of the Cushing Oil & Refining Corp.

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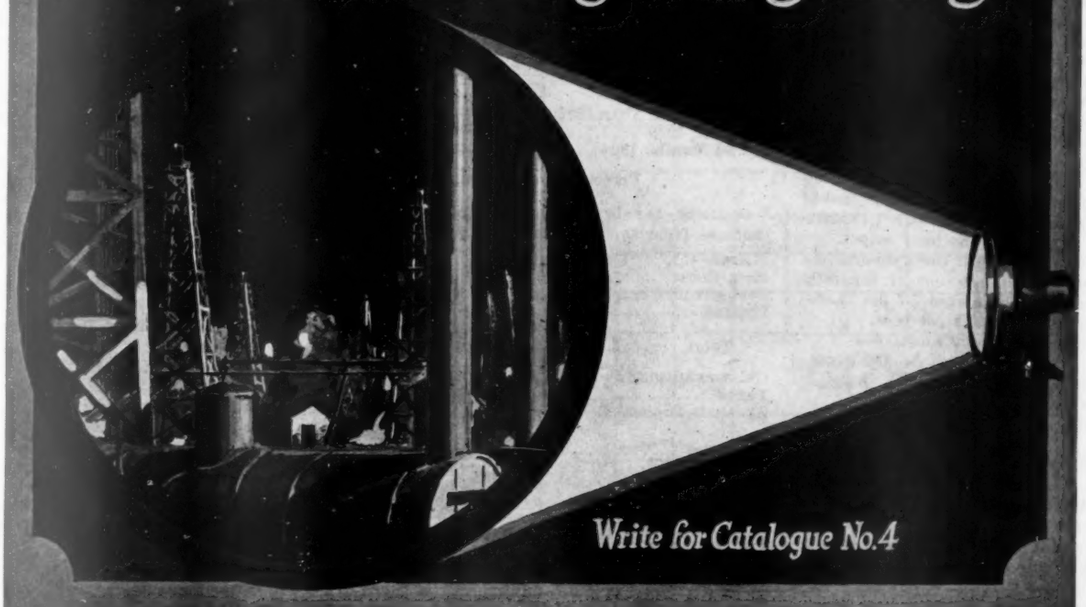

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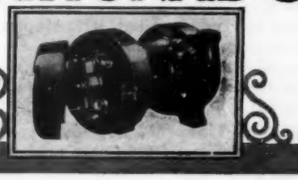

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Gasoline Production During 1923-1924

Texas Proved the Surprise of First 10 Months in 1924 by Taking First Place Away From Eastern Refiners

By Charles E. Bowles

In the first 10 months of 1924, Texas produced slightly more gasoline than the entire East Coast area with its giant refineries in New York harbor, Philadelphia, Baltimore, Boston and Providence.

In the above period the output of the Texas refineries, 1,403,000 000 gallons, was 19 per cent of the total output of the United States—and was more gasoline than was ever produced by any refining area in any one calendar year.

The East Coast ranked second with 1,394,000,000 gallons—18.9 per cent. In the full year 1923 the East Coast refineries made 1,400,000,000 gallons of gasoline, the largest amount, up to that time, that had ever been produced in any refining area in the United States. And some idea of the tremendous increase in the manufacture of gasoline can be gotten from the fact that, in the first 10 months of 1924, the East Coast refineries made almost as much gasoline as in the full year 1923.

Oklahoma-Kansas Third

In the first 10 months of 1924 the Oklahoma-Kansas area ranked third in the output of gasoline with 1,226,000,000 gallons—16.6 per cent, while California, that ranked first in the production of crude oil (with 32.6 per cent of the total output) ranked fourth in the production of gasoline with 1,132,000,000 gallons, or 15.3 per cent of the total output.

In the first 10 months of 1924, the Pennsylvania area refineries produced 3.9 per cent of the total output—the Arkansas-Louisiana area 5.8 per cent—and the Rocky Mountains area 7.4 per cent.

Grouping the 10-months' output we have—

	Per Cent
East of the Mississippi	35.9
Mid-Continent-Gulf Coast	41.4
Rocky Mountain	7.4
California	15.3
Total	100.0

Swinging to Mid-Continent

Compared with the full year 1923 the first 10 months of 1924 indicate that the gasoline pendulum is slowly and definitely swinging back to the Mid-Continent.

In 1923 the East Coast area refineries ranked first with 1,400,000,000 gallons—California ranked second with 1,283,000,000 gallons—Oklahoma-Kansas ranked third with 1,255,000,000—Texas fourth with 1,221,000,000—and the Indiana area fifth with 1,015,000,000.

The increase in California crude production, from 138,000,000 barrels (almost 25 per cent) in 1922 to 263,000,000 barrels (almost 36 per cent) in 1923, "shifted" the proportion of gasoline made in California in almost exactly the same ratio as the change in the crude.

In 1922 the Oklahoma-Kansas area ranked first with 1,167,000,000 gallons—the East Coast second with 1,161,000 000 gallons—Texas third with 1,058,000,000—the Indiana area fourth with 889,000,000—and California fifth with 693,000,000.

In the following tabulation the first amount is the gasoline produced in 1922—the second is for 1923—the third is the first 10 months of 1924. The amounts are given in "round numbers."

Gasoline Production

	Gallons	Per Ct.
East Coast	1,161,000,000	18.7
	1,400,000,000	18.5
	1,394,000,000	18.9
Pennsylvania	298,000,000	4.8
	315,000,000	4.2
	291,000,000	3.9
Indiana	889,000,000	14.3
	1,015,000.000	13.4
	965,000,000	13.1
Totals	2,348,000 000	37.8
	2,730,000,000	36.1
	2,650,000,000	35.9
Oklahoma-Kansas	1,167,000 000	18.8
	1,255,000,000	16.6
	1,226,000,000	16.6
Texas	1,058 000 000	17.1
	1,221,000,000	16.2
	1,403,000,000	19.0
Arkansas-Louisiana	366,000,000	5.9
	433 000 000	5.7
	428,000,000	5.8
Totals	2,591,000,000	41.8
	2,910,000,000	38.5
	3,058,000 000	41.4
Rocky Mountain	570,000 000	9.2
	632,000,000	8.4
	548,000,000	7.4
California	693,000,000	11.2
	1.283,000.000	17.0
	1,132,000,000	15.3
Totals for Year 1922	**6,202,000,000**	**100.0**
Year 1923	**7,556,000,000**	**100.0**
10 Months 1924	**7,388,000,000**	**100.0**

Percentage of Output

Omitting the barrels, and assembling the percentages from the foregoing tabulation, we have—

Area—	1922	1923	1924
East Coast	18.7	18.5	18.9
Pennsylvania	4.8	4.2	3.9
Indiana	14.3	13.4	13.1
Total	37.8	36.1	35.9
Oklahoma-Kansas	18.8	16.6	16.6
Texas	17.1	16.2	19 0
Arkansas-Louisiana	5.9	5.7	5.8
Total	41.8	38.5	41.4
Rocky Mountain	9.2	8.4	7.4
California	11.2	17.0	15.3
	100.0	100.0	100.0

The 34 months from January 1, 1922, to October 31, 1924, cover the industry's outstanding period of "readjustment"—and expansion. The tremendous increase in the production of crude oil was only partially reflected in the making of gasoline—and in this readjustment, measured in percentages, California and the Mid-Continent-Gulf Coast areas saw the greatest changes.

In the area east of the Mississippi, the outstanding fact has been the slow decrease in the percentage of our total output of gasoline, 37.8—36.1—35.9, in the face of a total increase of a billion gallons a year for the entire country.

Used California Crude

The storage tank has been one of the "shock absorbers" for the millions of barrels of California crude that largely replaced Mid-Continent crude in 1923 in Atlantic Seaboard refineries and, with this flood of crude in mind, it is surprising to note that even though the refineries east of the Mississippi made 400,000,000 gallons more gasoline in 1923 than in 1922, they made 1.7 per cent less of our total output.

Aside from California and our exports, the Atlantic Seaboard and Gulf Coast refineries absorbed all of the crude from California—and one is amazed to note the "evenness" with which the refineries in these three areas operated in 1923, under such abnormal conditions.

The East Coast refineries have produced 18.7—18.5—18.9 per cent of our total gasoline in this 34-month period. The Gulf Coast refineries in Texas and Louisiana absorbed large quantities of California crude yet Texas produced 17.1 per cent in 1922—16.2 per cent in 1923—with the big jump to first place this year, with 19.0 per cent of the total gasoline output of the United States.

The Oklahoma-Kansas output dropped from 18.8 per cent in 1922 to 16.6 in 1923—and stood at 16.6 for the first 10 months of 1924. The Arkansas-Louisiana area output has been much more regular than either Texas or Oklahoma-Kansas.

Some idea of how the Mid-Continent-Gulf Coast gasoline pendulum has swung during recent years can be gotten from the following percentages: In 1918—42.0 per cent of the total output of gasoline. In 1919—42.2 per cent. In 1920—43.2 per cent. In 1921—43.8 per cent. In 1922—41.8 per cent. In 1923—38.6 per cent. In the first 10 months of 1924—41.4 per cent.

Mexican Imports

From these percentages it would seem that as the peak imports of Mexican crude came in 1920-1921, the "menace" was a fuel oil menace and not a gasoline menace, as the peak percentage of Mid-Continent-Gulf Coast gasoline output came at the same time as the peak of Mexican imports. On the other hand the percentage "slump" of Mid-Continent gasoline output came at the same time as the "hump" in California's production—but with the slow ebb in California's "exportable" crude, the pendulum is swinging back to the Mid-Continent.

The gallonage output of the Rocky Mountain refineries has increased consistently during the last 34 months—but the percentage of their total output dropped from 9.2 in 1922 to 8.3 in 1923, and to 7.4 for the first 10 months of 1924.

In 1922 California produced about 25 per cent of the crude oil of the United States—in 1923 the production was 36 per cent—and in the first 10 months of 1924 it was 32.6 per cent. In 1922 the State produced 11.2 per cent of the gasoline of the United States—in 1923 about 17 per cent and in the first 10 months of 1924 about 15.3 per cent. The curve of production of gasoline has followed rather closely the curve of production of crude oil, even though millions of barrels were tankered to Gulf Coast and Atlantic Seaboard refineries. Crude storage has been the "stabilizer" that has made it possible for the gasoline production curve and gasoline demand curve of the country as a whole to travel reasonably close together rather than for the gasoline production curve to travel with the crude oil curve.

Output of Eight Areas

The accompanying graph shows the monthly output of the eight refining areas for the full year 1923 and the first 10 months of 1924. Based on the essentially different qualities of the crude oils handled, and also on the crude oil transportation systems used, these eight refining areas can be divided into two distinct groups.

Coastal—

1—East Coast
2—Texas
3—Louisiana (with Arkansas)
4—California

Inland—

5—Pennsylvania Area
6—Indiana Area
7—Oklahoma-Kansas
8—Rocky Mountain.

In the inland group, the Pennsylvania, Indiana and Rocky Mountain areas appear not to have been affected by the abnormal crude conditions in 1923, as their production curves for the 22 months traveled very closely together.

The East Coast, Texas and California areas were directly and favorably affected, from a purely production standpoint, while the Oklahoma-Kansas area was indirectly and very unfavorably affected—not from a gallonage standpoint, but from the struggle to find a market, as is clearly reflected by its curve.

The curves for 1923 for the East Coast, Texas and California areas follow surprisingly near the

same general trend—as well as approximately the same general output—the total for the year being 1,400,000,000—1,221,000,000 and 1,283,000,0000 gallons, respectively.

And while the Oklahoma-Kansas output checked closely with these three areas—1,255,000,000 gallons—the production curve varies widely from the curves for these three areas. With the Oklahoma-Kansas output for January, 1923, well above the output for either the East Coast, Texas or California, the February output dropped abruptly in Oklahoma-Kansas and Texas, while it increased on the East Coast and California. During the last five months of 1923 the effect of California oil on East Coast refineries is clearly shown on the graph by a large increase in output. The opposite effect on Oklahoma-Kansas production is also shown, the output dropping from April to the end of September and then increasing steadily until the end of January, 1924.

What the Curves Show

For the year 1923 the gasoline output of Oklahoma-Kansas and Texas traveled along radically different lines as shown by the graph—but have traveled along very much the same general lines in the first 10 months of 1924, with increases in the last half of the year.

On the other hand, the curves for the East Coast and California for the first 10 months of 1924 have traveled along the same general line—but with decreases in the last half of the year.

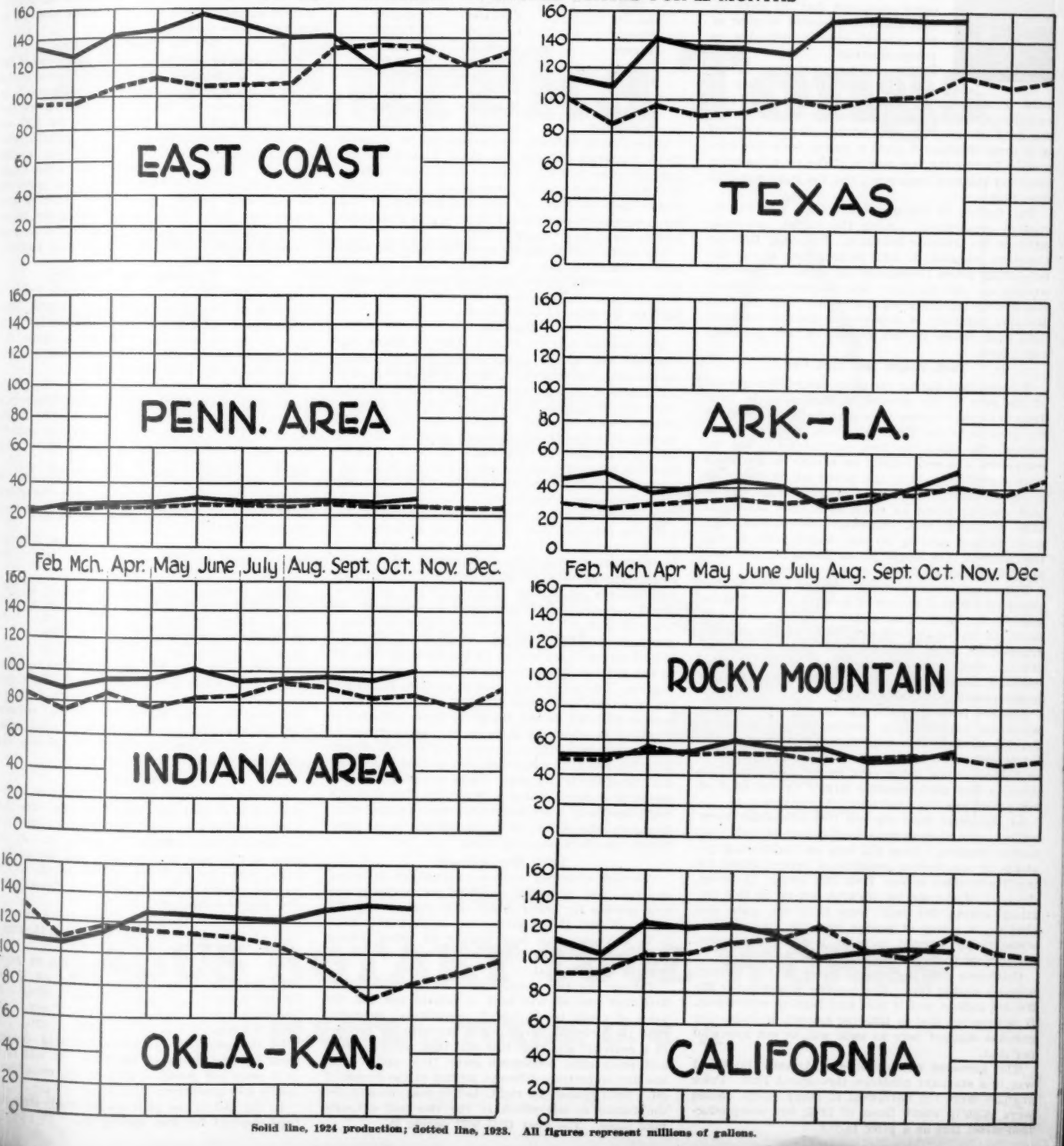
In the last 22 months the connection between the California situation and the East Coast refineries has been very intimate—they traveled up together—and are now traveling down together. The industrial position of the East Coast refineries is essentially different, however, from California's—and it will be a simple matter, as California's "explorable" surplus decreases and then disappears, for the East Coast refineries to go back to the Mid-Continent for their supply of high gravity crude. With California's three big fields reaching their peak production in the last half of 1923 the comparison between the production of crude oil and gasoline for 1922, 1923 and the first 10 months of 1924 is interesting.

	Crude Oil-Bbl.	Gasoline Gal.
1922	138,468,000	693,000,000
1923	262,876,000	1,283,000,000
1924	193,502,000	1,132,000,000

Estimating California's production for the full year 1924 at 230,000,000 barrels of oil and 1,330,000,000 gallons of gasoline it develops that while the State's oil production has dropped this year, the

(Continued on Page 268)

GASOLINE PRODUCTION IN UNITED STATES FOR 22 MONTHS



Solid line, 1924 production; dotted line, 1923. All figures represent millions of gallons.

Increased Competition on East Coast

Gasoline and Kerosene Prices in 1924 Disappointing But Lubricants, Wax and Fuel Oil Were All That Could Be Expected

By N. O. Fanning

NEW YORK, Jan. 26.—There were many encouraging features of the domestic refined oil situation on the Atlantic Seaboard during 1924. Gasoline and kerosene prices were a distinct disappointment to marketers here, but the prices obtained for lubricants, wax and fuel oil were all that could be expected in view of the general unsettlement due to overproduction.

The gasoline market was practically a repetition of that of 1923. Price advances from the low levels which prevailed early in the year occurred in the spring, but the flood of cheap gasoline which followed resulted in a drop of about 5 cents a gallon from the high mark. During the last month of the year the price situation steadied somewhat, but the tone was still unsettled.

The feature of the gasoline market was the increased competition among the larger marketing units on the Atlantic Seaboard. The Gulf Refining Company repeated its 1923 performance in the fall by cutting prices throughout the Atlantic Seaboard without any forewarning. The cut was immediately followed by the other big marketers. That the Gulf Refining Company is becoming a greater influence than ever before in this market is now generally recognized.

Tank Wagon and Tank Car

It seems that during the more competitive months of the year in the gasoline market—that is, from June to October—there were practically two markets for gasoline in the East. One was the tank wagon market, the other the tank car market. The big marketers who sell largely on a tank wagon basis were forced to yield to the prices set by the other group of refiners who were offering large lots in tank cars at prices as much as 8 cents below the tank wagon market. However, concessions were made without altering the tank wagon price, so that the course of tank wagon prices during the year does not reflect true conditions in the market.

Two large refiners were credited with having thrown millions of gallons of gasoline on the Eastern markets during the year at prices as low as 7 to 10 cents per gallon in tank cars, most of the gasoline represented being refined in the Mid-Continent or Middle West. In November and December these offerings lessened materially, which brought mucb improvement in the situation.

Another feature of the gasoline market was the wholesale expansion in service station facilities. Service stations were constructed in and about the larger cities two or three to a block, and often five to a block, some being next to one another. This practice was made possible largely by the flood of low-priced gasoline available.

At the same time the old line companies spent millions of dollars in the establishment of their own service stations. Pure Oil was an outstanding example of this, having constructed several dozen attractive stations in New York City alone. However, the bulk of the service stations put up in this territory during the year were eye-sores, pure and simple. A group of pumps was the general rule, without any attempt to make a good appearance. There were some notable exceptions, however.

California gasoline was a factor in the Eastern markets during 1924. One concern bought about 20,000,000 gallons and it was sold here at concessions. It is expected that in 1925 the amount of California gasoline shipped here as such will be cut about 50 per cent.

The kerosene market on the Atlantic Seaboard was in a stagnant condition throughout 1924. Price changes were the narrowest in many years. Sales were slightly above those of 1923, but overproduction offset this as a price factor.

A distinct change for the better occurred beginning in September, due largely, however, to increased exports.

The following table shows production and stocks of kerosene at Atlantic Coast refineries for the months indicated (Bureau of Mines figures):

	——Gallons——	
1924	Output	Stocks
October	49,820,000	72,682,000
September	41,610,000	76,747,000
August	48,918,000	85 815,000
July	43,965,000	83,331,000
June	40,982,000	78,579,000
1923		
October	48 061,000	56,844,000
September	47,630,000	63,333,000

These figures indicate that production at Atlantic Coast refineries did not run much higher, on the average, than in 1923. While stocks were reduced materially, they were nevertheless substantially higher than in 1923, so that the position of the kerosene market statistically could not be characterized as much better than in 1923.

The outlook for expanding consumption of kerosene is admitted not to be bright, but a material gain is expected in demand for furnace oil, which will encroach on kerosene stocks and automatically hold up the price of that product.

Fuel Oil

The Eastern fuel oil market takes on added significance due to the recent recognition of fundamental changes bearing particularly on consumption and prices of that product. It was stated on high authority that fuel oil would be likely in the near future to rule the price of crude, thus taking that leadership away from gasoline. As fuel oil must be sold in competition with coal, it has been predicted that the price of that product could not be largely advanced and therefore comparatively low prices for crude petroleum would follow.

No sooner was this theory advanced, however, before the price of fuel oil began to advance to a point where it could not compete with coal, which is at present on the Atlantic Seaboard. As a result some shipping interests have been converting their vessels from oil to coal burning. While the number is not large as yet any further advance in the price of fuel oil would probably bring additional conversions away from oil.

Fuel oil has been selling on the basis of from $7 to $14 per ton, depending on gravity, during recent months. Bunker fuel oil costs more than $12.50 per ton now at New York harbor, delivered, while bunker coal can be had for $6 or less. Although a considerable allowance is made for the convenience of oil over coal, still it is plan that shipers cannot afford to use oil in many instances on that basis. The big transatlantic passenger liners probably can still use oil in as much as they have purchased ne xt year's requirements at much under the current price. Furthermore, cleanliness and convenience is a paramount consideration with them.

Price May Advance

One high authority on fuel oil predicted the other day that fuel oil would go to $3 per barrel unless new sources for heavy crude were opened up. He also said that if the price went much higher than it is at present not only bunker oil using vessels but Diesel propelled boats would be compelled to convert back to coal.

Taking the two possibilities into consideration, first that fuel oil will have to remain low and the price of crude be depressed accordingly; secondly, that the price of fuel oil will have to go up due to a scarcity, and that this will turn many present and prospective consumers away from oil to coal, one has an entirely different picture of the future of oil. Both cannot be right, but it may remain for the future to tell which of the two will actually take place. The year 1925 will decide it.

In connection with this, the fact cannot be denied that there is no adequate substitute for gasoline at present. It is a product which the oil business alone can supply, and many believe that for this reason, prices should be dictated by this product, and not by fuel oil. The nation has practically unlimited coal reserves, and some entertain the belief that it is wasteful to use oil in competition with it except in unusually rare cases where oil is infinitely more desirable.

Gas Oil Outlook Good

There is a tremendous demand for gas oil in the big cities of the East. In New York alone several hundred million gallons are purchased annually by the gas companies. Prices for gas oil on new contracts are higher than those made for 1924—approximately one-quarter of a cent. Atlantic Refining obtained one large 1924 contract with the Consolidated Gas Co. It is expected that strong competition will develop in bids for 1925, but prices will be somewhat higher. Gas oil is becoming more scarce and with the demand growing the outlook is for a minimum of 6 cents per gallon for the product at refineries before 1925 is over as against a current price of 5¼ cents.

Lubricating Oils

Lubricating oils have been the bright feature of the eastern domestic markets during 1924, prices going higher than at any previous time in the history of the oil business with the exception of a few months at the close of 1920 and opening of 1921. Prices closed the year at the peak.

This big demand was traceable to the growing demand for automobile lubricants and renewed industrial activity toward the close of 1924. Another factor is that the grade of oils used to make the very best lubricants is diminishing while the demand is increasing.

The following table shows how lubricating oils advanced in price here during 1924, the opening prices being the lowest of the year, and the closing prices highest:

	Jan. 1	Dec. 31	Advance
Bright stock	.44	50½	.06½
Cylinder, extra lt. filt., 600 steam refined	.37½	46½	.09
Cylinder, lt. filt.	.32½	40½	.08
Red paraffin, 170 vis.	.18	21	.03
Red paraffin, 295 vis.	.25	25	...
Black oil, .895 sp. gr.	.15½	18	.02½

Cylinder oils were the strongest feature, advancing 8 to 9 cents per gallon. (The above prices are "in barrels.") As the table shows, bright stock advanced 6½ cents per gallon to 50½; red paraffin, 170 viscosity, advanced 3 cents, while no gain was recorded in red paraffin of 295 viscosity. Black oil showed a gain of 2½ cents.

Wax Strong

Paraffin wax ruled strong, the market following the course of that for lubricating oils. The higher melting points were particularly sought, the demand overtaxing local refiners to supply it. At times some of the large refiners were sold out on 135-137 a.m.p. refined wax three months ahead. At present the market is at its best, with the outlook for still higher quotations.

The following table shows the prices of paraffin wax at the beginning and close of 1924, with net gain:

	Jan. 1	Dec. 31	Advance
120-122 a.m.p.	.04	.06	.02
125-127 a.m.p	.04¼	.06⅛	.01⅞
130-132 a.m.p.	.04¾	.06½	.01¾
135-137 a.m.p.	.05⅝	.07½	.01⅞

In December 135-137 a.m.p. had sold off slightly from its best figure of the year. It sold as high as 8 cents per pound, a gain of 2⅝ cents over the year's low quotation.

In the fall of the year an unusually large industrial demand for wax sprung up.

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Average Gasoline Prices Low in 1924

Motor Fuel Quotations Lower Than for Several Years. Fuel Oils, Burning Oils and Lubs Higher. Wax Advances Nearly 100 Per Cent

By C. O. Willson

The year 1924 was a period of exceptionally low gasoline prices in all refining areas. As in the case of gasoline tank wagon quotations, motor fuel prices at the refineries were generally lower than any 12-month period since the entry of the United States into the World War in 1917.

Partially or wholly offsetting this decreased revenue from the principal product of a majority of the refineries was the fact that burning oils, fuel oils, lubricating oils and wax were generally higher in price during 1924 than 1923. These advances, coupled with the fact that prices on crude oil were lower in 1924 than in 1923 greatly aided the refiners and due to this fact in a majority of cases 1924 was a more favorable year than 1923. The latter year was generally conceded to have been one of the most disastrous years in the oil industry's history considered strictly from the viewpoint of the manufacturer.

These conclusions are based on the accompanying table giving the average weekly prices on representative refined products during 1923 and 1924. These average prices for 1924 were derived from another table giving low quotations as carried in the weekly issues of The Oil and Gas Journal. The high and low quotations for the two years of each product are given, as are the average price for the six-month periods.

Gasolines and Naphtha

Although average gasoline and naphtha prices were generally lower during 1924, the price trend for the year very closely resembles that of 1923. The year opened after a long period of low motor fuel prices in 1923, with a favorable outlook. Backed both by higher crude and tank wagon prices, gasoline prices advanced

Prices on Representative Refined Products for Export and Domestic Shipment During 192

	January					February		March				April					May	
	1	8	15	22	29	5	12	19	26	4	11	18	25	1	8	15	22	29	6	13
Gasoline and Naphtha—																				
Oklahoma (Group 3):																				
50-52, 450 end point	.08¼	.08½	.10½	.10⅝	.10⅝	.11½	.10⅝	.10½	.10	.10¼	.10¼	.10	.10¼	.10¼	.10¼	.10¼	.10	.10	.09⅝	.09⅝
56-58, 450 end point	.08½	.09	.11¼	.11¼	.11	.11⅝	.11	.10⅝	.10	.10	.10½	.10½	.10⅝	.10¼	.10¼	.10¼	.10¼	.10	.09⅝	.09⅝
55-60, 437 (U. S. Motor)	.09	.09½	.11½	.11½	.11½	.12⅛	.11¼	.10½	.10¼	.10⅝	.10⅝	.10½	.10⅝	.10⅝	.10⅝	.10¼	.10¼	.10⅜	.10	.09⅝
60-62, 400 end point	.09¾	.10⅛	.12⅛	.12⅛	.12⅛	.13⅛	.12⅛	.11⅜	.11⅛	.10⅝	.10⅝	.10⅝	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11	.10⅝
64-66, 375 end point	.10⅝	.11⅛	.13⅛	.13⅛	.13⅛	.14⅛	.13⅛	.12⅛	.12⅛	.13	.13	.13⅛	.13⅛	.13	.13	.12⅝	.12⅝	.12½	.11⅝	.11⅛
68-70, 350-365 end point	.11⅛	.12	.14	.14⅛	.14	.15⅛	.14	.13⅝	.13⅛	.13⅛	.13⅛	.13⅛	.13⅜	.13⅛	.13⅛	.13⅛	.13⅛	.13	.12⅝	.12⅜
Kansas:																				
58-60, 437 (U. S. Motor)	.09¼	.09⅝	.11⅝	.11⅝	.11½	.12⅛	.11½	.11	.10½	.11	.11	.10⅝	.10⅝	.10⅝	.11	.11	.10⅝	.10½	.10	.09⅝
North Texas:																				
50-52, 450 end point	.08¼	.08½	.10½	.11	.10⅝	.11⅝	.10⅝	.10⅜	.10¼	.10¼	.10⅜	.10⅜	.10⅜	.10¼	.10¼	.10¼	.10¼	.10	.09⅝	.09⅝
58-60, 437 (U. S. Motor)	.09	.09¼	.11½	.11⅝	.11⅛	.12	.11⅜	.10⅝	.10½	.10⅝	.10⅝	.10⅝	.10⅝	.10¼	.10½	.10½	.10½	.10⅛	.09⅝	.09⅛
64-66, 390 end point	.10¼	.11	.13¼	.13½	.13	.14	.14⅛	.13⅛	.12⅝	.13	.13	.12⅝	.13	.13	.12⅝	.12⅝	.12⅝	.12	.11⅝	.11
Pennsylvania:																				
52 Naphtha	.09	.09	.11	.11	.12⅝	.13	.13⅝	.13⅝	.13⅝	.13⅝	.13⅝	.13⅝	.12¼	.12¼	.12¼	.12¼	.12	.12	.13	.13
58 Gasoline	.10½	.11¼	.12½	.13½	.14⅛	.15	.16	.14⅝	.14⅝	.14⅝	.14⅝	.14⅝	.13	.12⅝	.12⅝	.13	.13	.13½	.13¼	.13⅛
60 Gasoline	.10⅝	.11¼	.13	.14⅛	.15	.15⅝	.15⅝	.15⅝	.15⅝	.15⅝	.15⅝	.14	.14	.14	.14	.14	.13⅝	.13⅝	.13⅝	.13⅛
64 Gasoline	.13	.13	.14½	.16	.17	.17½	.17½	.17½	.17	.17	.17	.17	.16½	.16	.16	.16	.16½	.15¼	.15	.15
68-70 Gasoline	.16	.16¼	.16½	.17⅛	.18⅝	.19⅛	.19⅛	.19	.19	.19	.19	.19	.18½	.18¼	.18¼	.18¼	.17⅝	.17⅝	.17½	.17⅛
California:																				
54-56, 437 (U. S. Motor) dom.																				
Natural Gasoline—																				
Oklahoma (Group 3):																				
Grade A, 72-78, under 375 e.p.	.08	.08½	.11	.10½	.10½	.11	.11	.10⅜	.10	.10	.10	.10	.10	.09⅝	.09⅝	.09⅝	.09½	.09	.08⅝	.08⅝
Grade B, 76-82, 375 e.p.	.07¼	.08	.10	.09⅝	.09⅝	.10⅝	.09⅝	.09⅝	.09¼	.09¼	.09	.09	.09	.08⅝	.08⅝	.08⅝	.08½	.08½	.08	.07⅝
Grade C, 80-88, 350 e.p.	.06	.07	.09	.08⅝	.09	.09⅝	.09	.08⅝	.08½	.08¼	.08¼	.08	.08	.08	.08	.08	.08	.08	.07⅝	.07
North Texas:																				
Grade A, 72-78, under 375 e.p.	.08	.08½	.10⅝	.10½	.10¼	.11¼	.11	.10½	.10¼	.09⅝	.09½	.09½	.09½	.09¼	.09¼	.09¼	.09¼	.09	.08¾	.08
Grade C, 80-88, 350 e.p.	.05⅝	.06⅝	.08⅝	.08⅝	.08½	.09⅛	.09	.08⅝	.08¼	.08	.07⅝	.07½	.07½	.07¼	.07¼	.07¼	.08	.07⅝	.07¼	.07
California:																				
68-80 absorption, 360-390 e.p.																				
78-84 compression, 350 e.p.																				
Blends—																				
Oklahoma (Group 3):																				
60-62, 460 end point	.08	.08¾	.11	.11	.10½	.11½	.10⅝	.10	.09⅝	.10	.10	.09⅝	.09⅝	.09½	.09½	.09½	.09½	.09½	.09¼	.08⅝
68-70, 430-437 end point	.08	.08⅝	.11	.11	.10½	.11¼	.10⅝	.10	.09⅝	.10	.10	.09⅝	.09⅝	.09½	.09½	.09½	.09½	.09½	.09¼	.08⅝
Burning Oils—																				
Oklahoma (Group 3):																				
41-43 water white Kerosene	.04½	.04¾	.05⅛	.05⅛	.05⅝	.06	.05⅝	.05⅛	.04⅝	.04⅝	.04⅛	.04⅛	.04⅛	.04⅛	.04	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛
42-44 water white Kerosene	.04¾	.05	.05⅝	.05⅝	.05⅝	.06¼	.06	.05⅝	.04⅝	.04⅝	.04⅝	.04⅛	.04⅛	.04⅛	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝
Kansas:																				
41-43 water white Kerosene	.05	.05¼	.05⅝	.05⅝	.05⅝	.06⅛	.06⅛	.06	.05⅝	.05⅝	.05¼	.05	.04⅝	.04⅝	.04⅛	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝
North Texas:																				
41-43 water white Kerosene	.04½	.04⅝	.05⅛	.05⅝	.05⅝	.06⅛	.06	.05⅝	.05¼	.05	.05	.04½	.04¼	.04	.04	.04⅛	.04¼	.04¼	.04¼	.04¼
Pennsylvania:																				
43 Kerosene prime white	.07	.07	.07	.07	.07⅝	.07⅛	.07⅛	.07⅛	.07⅛	.07⅛	.07⅛	.07	.07	.07	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝
45 Kerosene water white	.07½	.07⅛	.07⅝	.07⅝	.07⅝	.08	.08	.08	.08	.07⅛	.07⅛	.07⅛	.07¼	.07	.07	.07	.06⅞	.06⅞	.06⅝	.06⅝
California:																				
40-42 Kerosene water white																				
43-45, 445 Engine Distillate																				
Fuel Oils—																				
20-24 (El Dorado, Ark.) bbl.	72½	.80	.90	.90	1.00	1.00	1.05	1.00	1.00	1.00	.95	1.00	1.00	1.00	.90	.90	.95	.90	.85	.87½
Kansas:																				
24-26 Fuel Oil, bbl.	.95	1.05	1.15	1.25	1.20	1.30	1.20	1.15	1.20	1.20	1.15	1.15	1.15	1.10	1.15	1.15	1.05	1.00	1.00	1.00
38-40 Distillate	.03¾	.03¾	.04¼	.04	.04	.04¼	.04¼	.04¼	.04	.04	.04	.04	.03¾	.03¾	.03¾	.03½	.03¼	.03¼	.03¼	.03¼
Oklahoma (Group 3):																				
24-26 Fuel Oil, bbl.	.90	.95	1.10	1.15	1.15	1.25	1.17½	1.10	1.10	1.07½	1.05	1.05	1.05	1.02½	1.02½	1.00	.95	.87½	.85	.85
32-36 Gas Oil	.02½	.02¾	.02½	.03¼	.03⅜	.03⅜	.03½	.03¾	.03¾	.03¼	.03¼	.03	.03	.03	.03	.03¼	.03	.02⅞	.02⅝	.02⅝
38-40 Straw Distillate	.03¼	.03⅜	.04	.04	.04	.04¼	.04¼	.04	.03⅝	.03⅝	.03½	.03½	.03½	.03⅜	.03⅜	.03⅜	.03¼	.03¼	.03¼	.03¼
North Texas:																				
24-26 Fuel Oil	.80	.90	1.05	1.20	1.20	1.25	1.20	1.15	1.20	1.20	1.10	1.10	1.10	1.05	.90	.92½	.90	.85	.85	.85
32-36 Gas Oil	.02¼	.02⅝	.03	.03⅝	.03½	.03⅝	.03⅝	.03½	.03¼	.03¼	.03½	.03½	.03	.03	.03	.03½	.03¼	.03¼	.02⅞	.02⅝
38-40 Straw Distillate	.03¼	.03½	.04	.04	.04	.04¾	.04¼	.04	.03¾	.03¾	.03⅝	.03⅝	.03⅝	.03⅜	.03⅜	.03⅜	.03¼	.03¼	.03¼	.03¼
North Louisiana:																				
18-20 Fuel Oil, bbl.	.75	.85	1.10	1.10	1.10	1.05	1.05	1.05	1.00	1.00	1.00	.95	.90	.90	.92½	.95	.95	.90	.90	.90
Gulf Coast:																				
Gas Oil	.03¼	.04	.04½	.04½	.04¼	.04¼	.04¼	.04¾	.04¾	.04¾	.04¾	.05	.05	.05	.05	.05	.05	.05	.05	.05
Fuel Oil, bbl.	1.15	1.15	1.40	1.60	1.60	1.60	1.60	1.75	1.75	1.70	1.70	1.75	1.85	1.80	1.95	1.95	1.90	1.90	1.90	1.85
Pennsylvania:																				
30-34 Fuel Oil, gal.	.05	.05	.05¼	.05¼	.05¼	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05⅝	.05⅝
36-40 Fuel Oil, gal.	.05¼	.05¼	.05½	.05½	.06	.06	.06	.06	.06	.06	.06	.06	.06	.05⅝	.05⅝	.05⅝	.05⅝	.06½	.05⅝	.05⅝
California:																				
37-38 Distillate																				
18-20 Fuel Oil (tide water)																				
Lubricating Oils and Wax—																				
Oklahoma (Group 3):																				
100 vis., 3 color, 20-25 cold test	.05	.04¾	.04¾	.05⅛	.05⅛	.05½	.05½	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5	.05.5
180 vis., 3 color, 23-28 cold test	.12	.12	.12½	.13	.13	.13	.15	.15	.16	.16	.16	.16	.16	.15	.15	.15	.15	.15	.15	.16
200 vis., 3 color, 23-28 cold test	.13	.13	.13½	.15	.15	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16
180 vis., 6 color, 23-28 cold test	.10⅛	.11	.11½	.11½	.13⅛	.13½	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13½	.13⅛	.13⅛	.13⅛
200 vis., 5 color, 23-28 cold test	.11½	.12¼	.12½	.12½	.14⅛	.14½	.14⅛	.14⅛	.14⅛	.14⅛	.14⅛	.14⅛	.14⅛	.14½	.14½	.14½	.14⅝	.14½	.16⅝	.16⅛
240 vis., 5 color, 25-30 cold test	.13⅛	.13⅝	.14¼	.14⅝	.14⅝	.14⅝	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16
260-210 "E" Bright Stock	.25	.25	.26	.27	.27	.27	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28
124-126 White C. S. Wax, lb.	.03	.03½	.03½	.03⅝	.03⅝	.03⅝	.04	.04	.04	.04¼	.04½	.04½	.04¾	.04¾	.04¾	.04¾	.04¼	.05¼	.05	.04¾
190-200 dark green 40-50 cold test	.04	.04¾	.05	.06	.06	.06	.06¼	.06¼	.06¼	.07¼	.08	.08¼	.09	.09	.09	.09	.09	.09	.09	.09
Pennsylvania:																				
600 Pennsylvania Flash	.20½	.21½	.26	.26½	.27	.27½	.27½	.26	.26	.27	.27	.29	.29	.30½	.30½	.30½	.30½	.30½	.28	.28
Pennsylvania Bright Stock	.33	.34	.34½	.34½	.38	.38	.38½	.38½	.38½	.38½	.38½	.40	.40	.38½	.38½	.38½	.38½	.38	.38	.38
Gulf Coast:																				
No. 3 color, 200 vis., pale	.12½	.13½	.13½	.13	.13	.13½	.13½	.14	.14	.14	.14	.14	.14½	.14½	.15½	.16½	.15½	.15	.15	.15
No. 6, 200 vis., red oil	.11	.11	.11	.11	.11	.11½	.11½	.11½	.12½	.12½	.12½	.12½	.13½	.12½	.13½	.13½	.13½	.13½	.13½	.13½
California:																				
200 vis., 2½-3 color																				
200 vis., red, 4½-5 color																				
New York Domestic Market—																				
U. S. Motor Gasoline, 58-60, 437 e.p.	.10	.10	.10	.12	.12	.16	.16	.16	.16	.16	.16½	.16½	.16¾	.16½	.16½	.16½	.15½	.14½	.15	.15
Bunker Oil, 14-16 Be.	1.35	1.35	1.35	1.45	1.45	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.75	1.75	.40½	.45	.46
Diesel Oil, 28-30 Be., gal.	.03¾	.03¾	.03¾	.03⅝	.03⅝	.03⅝	.04	.04	.04	.05	.05	.05	.05	.05	.05	.05	.05	.05½	.05½	.05½
Furnace Oil, New York City																				
New York Export Market—																				
58-60 Motor Gasoline, cases	.24.4	.25.4	.25.4	.26.4	.27.4	.27.4	.27.4	.27.4	.27.4	.27.4	.27.4	.27.4	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15
U. S. Motor Gasoline, in bulk	.10.5	.11.5	.11.5	.12.5	.12.5	.12.5	.13.5	.13.5	.13.5	.13.5	.13.5	.13.5	.14.25	.14.25	.14.25	.14.25	.14	.14	.14	.14
Naphtha, 60° F., 59-61 Be.	.12	.13	.14	.14	.15	.15	.15	.15	.16	.16	.16	.16	.16	.16	.16	.16	.15.25	.16.25	.15.25	.15.25
Kerosene, stand. white, bulk, 40-42	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06½	.06½	.06½	.06½
Kerosene, stand. white, bbls., 40-42	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.13½	.13½	.13½	.13½
Standard white, in cases, 40-42	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.17.15	.16.9	.16.9	.16.9	.16.9
Water white, in bulk, 42-44	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07½	.07½	.07½	.07½
Water white, in bbls., 42-44	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.14½	.14½	.14½	.14½
Water white, in cases, 42-44	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.18.5	.17.9	.17.9
Lubricating Oil—																				
Cylinder, extra light, filtered	.37½	.37½	.37½	.37½	.37½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	.40½	1.75	1.75	1.75
130-120 a.m.p. Wax, lb.	.04	.04	.04	.04	.04	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.05	.05½	.06¼	.06¼	.06¼

rapidly during January and in some areas, during the greater part of February. It then became apparent that stocks of gasoline and current production were too great to sustain an advancing market or even maintain the prices already established.

Prices started to decline in February and March and despite the large increase in consumption too much material was constantly offered the consuming market by the refiners and the downward price trend continued throughout the spring, summer and early fall months. After prices had slumped to approximately the low level of 1923, the trend changed in October. As in 1923, it required practically all of the period of maximum gasoline consumption to reduce the excessive stocks and remove the distress material from the market.

As shown in the accompanying table the average low price on 58-60 U. S. Motor gasoline in Oklahoma, based on The Oil and Gas Journal quotations, was 8.96 cents during 1924 and 9.78 cents during 1923, a difference of .82 cents per gallon for the year. This average reduction in 58-60 U. S. Motor gasoline during 1924 is representative for the entire Mid-Continent area as is shown by the fact that the average price for same grade of gasoline in Kansas was 9.14 cents in 1924, this being .86 cents lower than the 10-cent average for 1923. For the same grade, the North Texas refiners were able to secure the same average price as Oklahoma refiners so their average price last year was only .69 cents lower than the previous year. The Oklahoma gasoline market is generally from ⅛ to ¼ cent higher than North Texas but during 1924, due to heavy export purchases, prices in the latter area were often as high or higher than Oklahoma quotations.

In Pennsylvania, the average price on 58-degree gasoline during 1923 was 13.52 cents and 12.24 cents last year, a difference of 1.38 cents. On 60-degree gravity gasoline the difference was 1.32 cents per gallon. This shows that the Pennsylvania refiners suffered more than those in the Mid-Continent area in the sale of the principal grades of motor fuel. The trend in naphtha prices followed those of gasoline very closely.

Higher Gravities

It is apparent from the accompanying table that the decline in the higher gravities at interior points was greater than in 58-60 U. S. Motor grade. In the Mid-Continent, the Oklahoma average price was 12.38 cents per gallon in 1923 and 10.98 cents in 1924, a difference of 1.4 cents per gallon. The same situation applied to Pennsylvania, where the average price was 16.83 cents in 1924 for 64-degree gasoline and 14.77 cents in 1924, a difference of 2.06 cents.

Export Gasoline

The trend in export gasoline prices was the same in the domestic grades. The average prices at New York for U. S. Motor in bulk was 13.87 cents per gallon in 1923 and 13.04 cents per gallon in 1924, a difference of .83 cents per gallon. This compares with the .82 cents difference in Oklahoma domestic market for the same grade of gasoline. For the 58-60 U. S. Motor gasoline in cases, the New York domestic market was 27.41 cents in 1923 and 27.05 cents in 1924, a difference of .36 cents per gallon.

The remainder of refinery price table with average prices will be found on page 186.

It will be noted that in all instances the decline in average prices during the two years occurred the first half of the year. Gasoline prices did not advance as much the first half of 1924 as they did the same period of 1923 but the reverse is true during the latter halves of the two years. This situation in the Mid-Continent area was shown in the fact that the

Prices Based on the Low Quotation as Carried in the Weekly Reports of The Oil and Gas Journal.

May	June				July					August				September					October				November			
27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25
.09½	.09	.08½	.08	.08½	.08½	.08½	.08	.07½	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07	.06¼	.06¼	.06¼	.06¼	.06¼	.06½	.06⅛	.06⅛	.07	.07
.09½	.09	.08½	.08	.08¾	.08¾	.08½	.08	.07¾	.07½	.07⅜	.07¼	.07½	.07½	.07¾	.07½	.07	.06¼	.06¼	.06¼	.06½	.06½	.06⅝	.06⅝	.07	.07¼	.07¼
.09⅝	.09¼	.08¾	.08¼	.09	.09¼	.08¾	.08½	.08	.07¾	.07⅝	.07½	.07¾	.07¾	.08	.07¾	.07	.06½	.06½	.06½	.06¾	.07	.07¼	.07¼	.07½	.07¾	.07¾
.10½	.10¼	.09¾	.09¼	.10	.10	.10	.09¾	.09	.08¾	.08¾	.08¾	.08¾	.08¾	.09	.09	.08¾	.08¼	.08	.08	.08	.08½	.08¾	.08¾	.08¾	.09	.09
.11	.10¾	.10¼	.09¾	.10½	.10¾	.10½	.10¼	.09¾	.09¼	.09¼	.09¼	.09¼	.09¼	.09½	.09½	.09¼	.09	.09	.09	.09	.09¼	.09½	.09½	.09¾	.10	.10¼
.12	.11⅝	.11	.11	.11¼	.11¼	.11¼	.11	.10¾	.10½	.10¼	.10	.10¼	.10¼	.10½	.10¾	.10	.10	.10	.10	.10	.10¼	.10¼	.10¼	.10¼	.10½	.10⅝
.10	.09⅝	.09	.08½	.09	.09¼	.09	.09	.08¾	.08	.07⅝	.07⅝	.07⅝	.08	.08	.08	.07¼	.06⅝	.06½	.06½	.06⅝	.07	.07½	.07¼	.07½	.07⅝	.08
.09½	.09½	.08½	.08	.08½	.08½	.08½	.08	.07½	.07½	.07¼	.07	.07¼	.07¼	.07¼	.07¼	.06¾	.06¼	.06¼	.06¼	.06¼	.06¼	.06½	.06½	.07	.07	.07⅝
.09⅝	.09¾	.08½	.08¼	.09	.09¼	.08¾	.08¼	.08	.07¾	.07⅝	.07⅝	.07⅝	.07⅝	.08	.07⅝	.07	.06½	.06½	.06⅝	.06⅝	.07	.07¼	.07¼	.07½	.07⅝	.08
.10⅝	.10½	.10	.10	.10⅝	.10½	.10¼	.10	.09½	.09	.09	.08⅝	.08⅝	.09	.09¼	.09	.08⅝	.08½	.08½	.08½	.08½	.08⅝	.08⅝	.09	.09¼	.09½	.10¼
.12	.12	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11¼	.11¼	.11¼	.11¼	.11¼	.11	.11	.10½	.10¼	.09½	.09	.09	.09	.09¼	.09¼	.10¼
.12¼	.12¼	.12	.12¼	.12¼	.12¼	.12¼	.12¼	.12¼	.12¼	.12¼	.11⅝	.11⅝	.11⅝	.11⅝	.11⅝	.11¼	.11¼	.10⅝	.10½	.10	.09⅝	.09⅝	.10¼	.10½	.10½	.11
.13¼	.13¼	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12½	.12½	.12½	.12½	.12⅝	.12	.12	.11½	.11¼	.10½	.10½	.10⅝	.11	.11¼	.11⅝	.11⅝
.15	.15	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14½	.14¼	.14½	.14½	.14½	.14⅝	.14	.14	.13½	.13¼	.11⅝	.11⅝	.12¼	.12¼	.13½	.14½	.14½
.16⅝	.16⅝	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16¼	.16½	.17	.17	.17¼	.17¼	.17¼	.17¼	.17¼	.17	.17	.17	.17	.17	.17	.16½
					.10½	.10½	.10½	.10½	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.09	.09	.09	.09
.07½	.07	.06	.06¼	.07	.07½	.08	.07⅝	.07¼	.07¼	.07¼	.07¼	.07⅝	.08	.08½	.08⅝	.08⅝	.08⅝	.08½	.08	.08	.08	.08¼	.08¼	.08½	.08½	.08⅝
.07	.06⅝	.06¼	.06	.06½	.07¼	.07½	.07¼	.07	.07	.07	.07¼	.07½	.07⅝	.08¼	.08½	.08½	.08½	.08½	.07⅝	.07⅝	.07⅝	.07⅝	.08	.08	.08¼	.08½
.06⅝	.06¼	.06	.05⅝	.06¼	.06⅝	.07	.07	.06¾	.06¾	.06½	.07	.07¼	.07⅝	.08¼	.08½	.08½	.08½	.08¼	.07½	.07¼	.07¼	.07¼	.07½	.07⅝	.08	.08¼
.07¼	.07	.06¼	.06	.06⅝	.07¼	.07⅝	.07½	.07¼	.07¼	.07½	.07¼	.07½	.08	.08½	.08⅝	.08⅝	.08½	.08½	.08	.08	.08	.08	.08¼	.08½	.08½	.08⅝
.06⅝	.06½	.05¾	.05¾	.06¼	.06½	.07	.07	.06¾	.06¾	.06½	.07	.07¼	.07½	.08	.08½	.08½	.08¼	.08¼	.07½	.07	.07	.07¼	.07¼	.07½	.08	.08¼
					.09½	.09½	.09½	.10	.10½	.10½	.10½	.10½	.10¼	.10¼	.10¼	.10	.10	.10	.10¼	.10¼	.10½	.10½	.10½	.10½	.10½	.10
					.10	.10	.10	.10	.10	.10	.11	.12	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.10	.10	.10
.09	.08⅝	.08½	.08	.08¼	.08	.08½	.08	.07½	.07¼	.07½	.07¼	.07¼	.07½	.07½	.07½	.07	.06½	.06½	.06½	.06⅝	.07	.07	.07¼	.07½	.07⅝	.07⅝
.09	.08⅝	.08¼	.07⅝	.08	.08¼	.08½	.08	.07½	.07¼	.07¼	.07¼	.07¼	.07½	.07⅝	.07⅝	.07	.06½	.06½	.07	.07	.07¼	.07¼	.07½	.07½	.08	.08
.04¼	.04¼	.04⅛	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04¼	.04⅝	.04½	.04½	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04½	.04⅝	.04⅝	.04⅝
.04½	.04½	.04½	.04⅜	.04¼	.04¼	.04¼	.04⅜	.04¼	.04¼	.04¼	.04¼	.04½	.04⅝	.04⅝	.04¾	.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅞	.04⅝	.04⅝	.04½	.04½
.04½	.04½	.04⅝	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04½	.04⅝	.04⅝	.04⅝	.04¾	.04⅞	.05	.05	.05	.05	.04⅞	.04⅝	.04⅝	.04⅝	.04⅝
.04¼	.04⅛	.04	.03⅞	.03⅞	.03⅞	.03⅞	.03⅞	.03⅞	.04	.04	.04	.04⅛	.04¼	.04⅝	.04⅝	.04½	.04⅝	.04⅝	.04⅝	.04⅝	.04½	.04½	.04½	.04⅜	.04¼	.04¼
.06	.06	.06	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.05⅞	.06	.06¼	.06⅝	.07¼	.07½	.07½	.07½	.07¼	.07	.07	.07	.07¼	.07¼	.07½
.06¼	.06¼	.06¼	.06	.06	.06	.06⅛	.06¼	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06¼	.06½	.07	.07½	.07½	.07½	.07½	.07½	.07¼	.07¼	.07¼	.07½	.07½	.07½
					.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½
					.08¼	.08¼	.08¼	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.06½	.06½	.06	.06
.85	.85	.75	.75	.77½	.80	.80	.85	.80	.80	.80	.80	.85	.85	.90	.90	.95	.95	.95	.90	.90	.90	.95	1.00	1.00	1.05	1.05
.95	.95	.95	.90	.95	.95	.95	.95	.95	.90	.90	.90	.90	.95	1.00	.95	1.00	1.00	1.00	1.05	1.05	1.05	1.10	1.10	1.10	1.17½	1.15
.03⅝	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.02½	.03½	.03½	.03½	.03½	.03½	.03½	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝
.77½	.75	.72½	.75	.80	.77½	.77½	.77½	.75	.75	.72½	.75	.80	.85	.90	.90	.95	.95	.92½	.90	.90	.92½	.95	1.00	1.00	1.05	1.05
.02⅝	.02⅝	.02½	.02⅝	.02¾	.02¾	.02¾	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02¾	.02¾	.02¾	.02⅞	.03	.02⅞	.02¾	.02⅞	.02⅞	.02⅞	.02¾	.02¾	.02⅞	.02⅞
.03¼	.03¼	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03¼	.03¼	.03¼	.03¼	.02⅝	.03½	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03½	.03½	.03½
.80	.77½	.77½	.77½	.80	.08	.08	.08	.08	.72½	.72½	.72½	.72½	.77½	.85	.82½	.87½	.90	.90	.92½	.90	.92½	.95	.95	.95	1.05	1.05
.02⅝	.02⅝	.02½	.02½	.02⅝	.02¾	.02¾	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02¾	.02¾	.02¾	.02¾	.02⅞	.02⅞	.02¾	.02¾	.02¾	.02¾	.02⅝	.02¾	.02¾	.02⅞
.03¼	.03¼	.03¼	.03⅛	.03⅛	.03⅛	.03⅛	•03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03¼	.03¼	.03¼	.03¼	.03½	.02⅞	.03½	.03½	.03⅝	.03⅝	.03⅝	.03⅝	.03½	.03⅝	.03½
.90	.90	.87½	.85	.85	.85	.85	.85	.85	.85	.85	.85	.85	.90	.90	.90	.95	.95	.95	.95	.95	1.00	.95	.95	1.00	.95	1.00
.05	.05	.04¾	.04½	.04	.04½	.04½	.04½	.04½	.04	.04	.04	.03½	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.03¾	.04½	.04½	.04½	.04½	.04½	.04½
1.80	1.80	1.75	1.75	1.60	1.60	1.60	1.60	1.50	1.45	1.40	1.45	1.45	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.60	1.60
.05½	.05½	.05½	.05½	.05½	.05½	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05¼
.05½	.05½	.05⅝	.05⅝	.05⅝	.05⅝	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05⅝
					.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝
					1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
.05.5	.05.5	.05.5	.05.5	.05.5	.05	.05	.05½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04	.04	.04	.04	.04	.04
.15	.15	.13	.13	.12½	.12½	.12½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.09½	.08½	.08½	.08½	.08½	.08½	.08½
.16	.16	.13½	.13½	.13	.13	.13	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.10	.10	.10	.10	.10	.10
.13½	.13½	.12	.12	.11½	.11½	.11½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.07½	.07½	.07½	.07½	.07½	.07½
.14½	.14½	.12½	.12½	.12	.12	.12	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.09	.09	.09	.09	.09	.09
.16	.16	.15	.15	.14½	.14½	.14½	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.12	.12	.12	.12	.12	.12
.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.28	.29	.29	.29	.29	.29	.29
.04⅝	.04½	.04	.03¾	.03¾	.03¾	.03¾	.03¾	.03⅞	.04	.04	.04	.04¼	.04¾	.05¼	.05¼	.05¼	.05⅜	.05¼	.05¼	.05¼	.05¼	.05¼	.04⅞	.04⅞	.04⅞	.05
.08¼	.08¼	.07½	.07	.07	.07	.07	.06½	.06½	.06½	.06½	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
.27	.27	.26½	.25½	.25½	.25½	.25½	.25½	.25	.25	.25	.25	.25	.25	.25	.28	.25½	.28	.28	.28	.28	.28	.29	.29	.29	.30	.30
.36½	.36½	.35½	.35½	.35½	.35¼	.35¼	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.36	.36	.36	.36
.15	.15	.14½	.14½	.14½	.14½	.15	.14½	.14	.13	.13	.12	.11	.12	.12	.12	.12	.12	.12	.12	.12	.12½	.12½	.12½	.13½	.13½	.13½
.13½	.13½	.13	.13	.13	.13	.13	.12½	.12	.10	.10	.10	.09	.10	.10	.10	.10	.10	.10	.10	.10½	.11	.11	.11	.12	.12	.12
					.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
					.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13
.14½	.14½	.14	.14	.14½	.14½	.14½	.13	.13	.13	.12	.11	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10½	.10	.10	.10	.11⅝	.12	.12
.45	.45	.45	.45½	.45½	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.80
.05½	.05¼	.05½	.05½	.05½	.05½	.05½	.05½	.05¼	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04.8	.04.8	.04.8	.04.8	.04.8	.04.8	.04.8	.04.8
					.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.28.15	.27.15	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.14	.26.40	.26.40	.26.40
.14	.14	.14	.14	.14	.14	.14	.14	.14	.13	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾	.12¾
.15.28	.15.28	.15.28	.15.28	.15.28	.15.28	.15.28	.15.28	.15.28	.14.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25	.13.25
.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½
.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½
.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9	.16.9
.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07½
.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½
.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9	.17.9
1.75	1.75	1.75	1.75	1.75	.45½	.45½	.45½	.45½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½	.44½
.06¼	.06¼	.06¼	.05	.05	.05	.05	.05	.05	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05¼	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.06	.06	.06	.06

average price on 58-60 U. S. Motor the first half of 1923 was 12.32 cents and 10.28 cents the first half of last year, a difference of 2.04 cents in favor of 1923. For the latter half of the two years, the average price was 7.26 cents in 1923 and 7.69 cents in 1924, a difference of .43 cents in favor of 1924.

Natural Gasolines

The reduction in natural gasolines during 1924 was not quite as much as in the refinery grades. In some areas average prices for 1924 and 1923 were practically the same. In the Mid-Continent, the average price on Grade A in North Texas was 8.85 cents per gallon in 1923 and 8.53 cents in 1924, a difference of .32 cents per gallon in the yearly averages. In Oklahoma the average price on the same grade was 9.17 cents per gallon in 1923 and 8.66 cents per gallon in 1924. Grade C in the same State averaged 8.23 cents in 1923 and 7.67 cents per gallon in 1924.

Although average natural gasoline prices for the entire 12 months of 1924 were lower than in 1923, the average prices during the latter half of 1924 were considerably higher than the same period of 1923. Natural gasolines prices declined during the spring and summer of 1924 as they did in 1923 but the expected big slump in the late fall did not materialize and has not up to this writing. Ordinarily, as soon as refiners begin storing their refinery gasoline output the demand for natural gasolines falls off with a resulting slump in price. Refiners the latter part of 1924 continued to buy the natural grades and prices advanced. The average price on Grade A, the latter half of 1924 was 8.21 cents per gallon which was 1.39 cents per gallon higher than the average for the latter half of 1923. As shown in the table this situation applied to all grades and areas.

Blends

Blends as a motor fuel did not occupy as an important place during 1924 as they did in previous years. The great bulk of natural gasoline output is now taken by the refiners who utilize it in the manufacture of straight run gasoline. In Oklahoma, the average price in 1924 was 8.5 cents per gallon and 9.01 cents per gallon in 1923, a difference of .51 cents per gallon.

Kerosenes Strong

Kerosene was one of the strong products of the year. Both export and domestic prices in all areas were higher during 1924 than for several years. In Oklahoma, the average price for the year was 4.49 cents for 41-43 water white and 4.73 cents for 42-44 water white. This price was approximately ½ cent higher than the average for the year 1923. This same relative situation applied to kerosene of all grades in the Mid-Continent Field.

In Pennsylvania, the increase was not quite so great. The average price of 43 water white kerosene was 6.71 cents per gallon in 1924 and 6.52 cents per gallon in 1924. In the export market the average price on 40-42 standard white kerosene in the bulk at New York was 6.65 cents per gallon in 1924 and 6.36 cents in 1923, a difference of .29 cents per gallon. The average price on 42-44 water white in bulk was 7.27 cents and 7.67 cents last year. The same approximate difference will be found in all export grades.

Distillates

Closely connected to the favorable trend in kerosenes, was the high distillate market. The distillate demand greatly increased during the year, due to the numerous installations of distillate burners in homes and office buildings. For the Mid-Continent area the average price of 38.40 straw distillate in North Texas was 3.47 cents per gallon last year and 2.96 cents per gallon in 1923.

Diesel Oil

The average price on 28.30 gravity Diesel oil at New York was 4.87 cents last year. This was .59 cents higher than the average price for the previous year.

Fuel Oil

The average price on Bunker oil at New York during 1924 was $1.6934 per barrel. This average is 12.44 cents per barrel greater than the average of $1.569 for 1923. In the Gulf Coast area the average price was also higher than in 1923. All of this increase over 1923 came the latter half of the two years. The average price on bunker oil the last half of 1924 was $1.7611 and $1.516 for the latter half of last year. The higher prices, the latter part of last year are explained as a development of the falling off in the low gravity crude production of both Mexico and California. Large quantities of fuel oil were available to East Coast buyers during 1923 when the new fields in California were brough in. Production declined in California and Mexico during 1924 and less and less material has been offered to outside areas. This forced an advance in bunker oil and all fuel oils delivered to consumers located along the coast.

At interior points, considered for a period of a year, there was little price difference during 1923 and 1924. During the greater part of 1924, prices were slightly lower than for the same period in 1923, but toward the end of 1924, prices strengthened bringing up the yearly average.

The average price on 24-26 fuel oil in Oklahoma last year was 95.4 cents per barrel with 95.11 cents per barrel, the average price for the same grade in 1923. For the first half of 1924, the average was 97.3 cents per barrel and 93.61 cents per barrel the latter half. In 1923 the average for the first half was $1.0368 per barrel and 86.54 cents for the latter half. In North Texas, average fuel oil prices in 1924 were slightly higher than in 1923, the average price for the two years being 93.2 cents and 87.95 cents. In Pennsylvania, the average price for 30-34 fuel oil was 5.4 cents per gallon in 1923, and 5.37 cents per gallon in 1924.

Gas Oil

Gas oil prices were higher in 1924 than 1923. The average price in Oklahoma for 32-36 gas oil was 2.66 in 1923 and 2.91 cents in 1924. On the Gulf Coast the average price was 4 cents in 1923 and 4.41 cents in 1924.

Lubricating Oils

The comparative situation this year and last in regard to lubricating oils is mixed. In the Gulf Coast area, the zero cold test oils are higher this year than last. The average price on No. 3 Color, 200 viscosity pale, in 1924 was 13.52 cents and 11.47 cents in 1923. In Pennsylvania, prices are also higher. The average price on Pennsylvania bright stocks was 36.55 cents in 1924 and 33.37 cents in 1923. In Oklahoma, the average price on 100 viscosity, three color, was 6.06 cents in 1923 and 4.89 cents in 1924. The 200-210 bright stock price last year was 27.9 cents and 26.42 cents the year before. In the export market the average for 1924 was 43.14 cents per gallon and 38.23 cents in 1923.

Wax

As previously explained, wax showed the greatest gain of any refined product. In Oklahoma, the average price increased from 2.54 cents per pound in 1923 to 4.46 cents per pound in 1924. In the export market the New York export prices increased from 3.25 cents per pound during 1923 to 5.36 cents per pound in 1924.

Market Conditions in California Much More Favorable Than Year Ago

By PAUL SHOUP
President, Associated Oil Company

The market conditions facing the oil industry as a whole on the Pacific Coast are very much more favorable than at this time two years ago, and the outlook equal to that of a year ago.

Because of the production from new fields in southern California, notably Dominguez, the market met with a volume of oil in the latter part of 1924 not anticipated in the spring. The export of crude oil to the Atlantic Coast continued and locally some of the smaller refining companies felt it necessary to wholesale their products at less than current prices with the ultimate outcome that the retail prices of gasoline dropped to a point where there is very little, if any, profit from oil purchased at prevailing field market prices.

Paul Shoup

No new field looms in sight at this time and except possibly for a very short period of a month or so it is altogether probable that the present daily production in California will not be exceeded during the coming year, but instead will decrease. There will be very much less crude oil marketed on the Atlantic Coast. If this prognosis be correct, the diminishing supply of light crude oil will carry with it an increase in the price of gasoline. There is plenty of storage available for all of the light production now in sight and most of the companies on the Coast are content to store rather than sell at the present low prices on the Atlantic Coast.

While the last six months on the Pacific Coast have been from the point of view of refining and distributing companies not at all satisfactory, the belief is current that 1925 will on the whole be very much more profitable than 1924, though the first six months may not show great or any improvement over the first six months of 1924. I hesitate to make any prophecy for 1925 as to the industry as a whole in the United States. The elements entering into the situation are so many and varied and the prophets have been tripped up so often by unforseen developments that we are all getting cautious. Indeed, if the industry could be as cautious in its affairs as it is getting to be in its prophesies, perhaps we would all be better off. The purchasing power of the country as a whole will undoubtedly be greater in 1925 than in 1924 and there will be a larger demand with a better assurance in advance for the products of oil that should breed confidence and help stabilize prices. If, however, this is met with great activity on the part of the producers and refiners generally in an effort to reach wildly for the increased demand, then we will have the old story over again with bright hopes early in the year that bring no realization in the fall.

KENTUCKY-TENNESSEE

(Continued from Page 50)

small producing wells. In the Emery-Moore Pool, the Carter Oil Co. brought in its No. 4 Gooden for 8 bbls. from a total depth of 538 feet, 185 feet below the black shale. Eight feet of sand was shot with 30 quarts of nitro. On the Bruton tract, Fred Moore's No. 3 Bruton tested 6 bbls. at 500 feet, 185 feet below the shale.

In the Gorby Pool, L. J. Emery, Jr., & Sons got a 9-bbl. pumper in their No. 2 on the Dorr and Greer farm in the 185-foot below the shale sand. It is east of the Cassidy well and one-fourth mile south of the Gorby Pool proper.

Drilling Activities

Emory-Moore Pool: Carter Oil Co.'s No. 2 Jess Wininger, drilling at 230 feet; Star Oil Co.'s No. 5 Free, drilling at 400 feet; Fred Moore's No. 4 Travis, drilling at 200 feet; Wiggins & Gillespie's No. 7 Scott, drilling at 300 feet; Henderson Oil Co.'s No. 4 Burris, drilling at 450 feet.

Hall Baker Pool: Consolidated Gas Co.'s No. 1 Houck, drilling at 205 feet; No. 1 Rogers, drilling at 420 feet; No. 2 Hall Baker, cleaning out after shot; No. 3 Hall Baker, spudding; Harrington & Norris Brothers' No. 1 Evans, testing; No. 2 spudding; Wood Oil Co.'s No. 2 John Church got a good showing of oil at 497 feet; No. 2 Will Church, drilling at 460 feet.

Gorby Pool: In the Gorby Pool, Lewis J. Emory, Jr., & Sons, are drilling in No. 1 Jim Bybee; Big Jack Oil & Development Co.'s No. 1 Hatfield, spudding at 60 feet; Porter & Co.'s No. 2 McLaughlin, drilling at 100 feet; T. L. Gorby's No. 1 Bybee, drilling at 130 feet.

Warren County

Very little was accomplished in Warren County the past week on account of the inclement weather and only one completion was shown. It is Sine, Doak and others' No. 4 on the H. Shannon place in the Richpond shallow pool, several miles south of Bowling Green, which was registered as a duster in the shallow sand at an approximate depth of 500 feet. This pool so far has shown but three dry holes out of a total of 42 completions. Most of the wells come in from 5 to 25 bbls., while a few have shown as high as 60 bbls. from the Mississippian lime. At present eight rigs are up in the pool, five of which are active. Bolling & Lowman's No. 3 H. Shannon, 73 acres was drilling at 243 feet; Caskey & Pryor's No. 6 Price is a rig; Russell and others' No. 4 Lee Butts, west of the Price, was shut down; Roy Hogan's No. 3 C. L. Dillard, west of No. 1 Ford, and his No. 4 Ben Ford, offsetting Shannon No. 1, were drilling at unknown depths; Frank Fritz's No. 6 Doctor Moss, drilling at 400 feet; Tichner and associates' No. 1 Potter, drilling at 190 feet; Illinois-Kentucky Oil Syndicates' No. 6 Vance, shut down.

In the McLemore-Gillespie-Price Pool, 14 miles southwest of Bowling Green, the Ruby Consolidated Development Co. is spudding No. 6 Price, 450 feet east of No. 5; Amfot Oil Corp.'s No. 8 Jess Shanks, shut down on top of the deep sand; same company's No. 9 Jess Shanks, drilling at 1,000 feet; P. H. Lavel's No. 7 W. R. Hunton was a rig; H. Z. Clark's No. 5 Gillespie is a location; Lucille Oil Syndicate's No. 6 Morehead, drilling at 760 feet; H. J. Dobson was spudding No. 5 on the George Rigglewood; Cunningham & Henry's No. 7 Bryant, south of No. 6, was making progress below the shale.

In the Davenport Pool, T. A. Sheridan's Nos. 3, 5, 6, 7 on tract No. 2 of the Georgiana Davenport farm were shut down; Teague and others' No. 1 Man-

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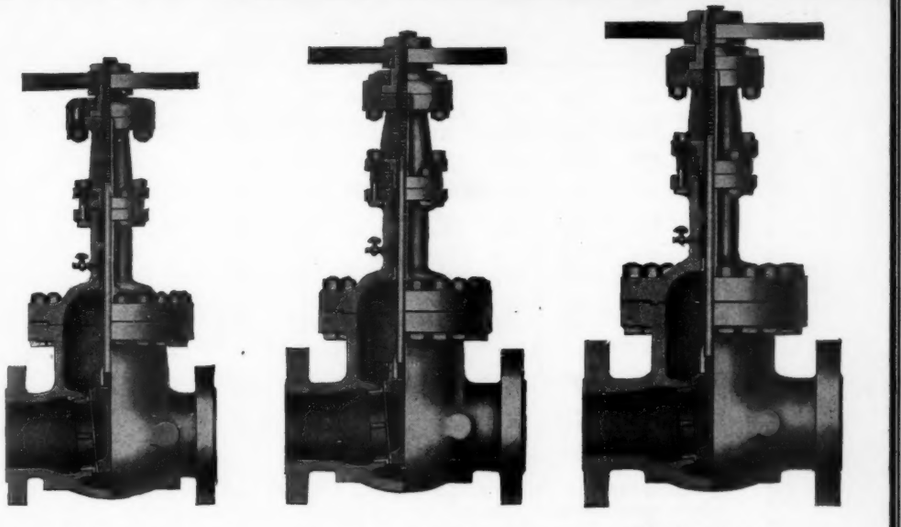

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	December					1924					1923				
	2	9	16	23	30	Av. Price for Year	High	Low	Av. Price 1st 6 Mo.	Av. Price 2d 6 Mo.	Av. Price for Year	High	Low	Av. Price 1st 6 Mo.	Av. Price 2d 6 Mo.
Gasoline and Naphtha—															
Oklahoma (Group 3):															
50-52, 450 end point	.07½	.07½	.07½	.07¼	.07	.08.43	.11⅛	.06¼	.09.82	.07.10	.09.32	.13½	.05¼	.11.64	.08.32
56-58, 450 end point	.08¼	.08½	.08¼	.07⅞	.07½	.08.66	.11⅝	.06¼	.09.94	.07.43	.09.39	.13½	.06	.11.78	.08.30
58-60, 437 (U. S. Motor)	.08½	.08⅝	.08½	.08	.07⅞	.08.96	.12¼	.06⅛	.10.28	.07.69	.09.78	.14½	.06⅛	.13.32	.07.36
60-62, 400 end point	.09⅛	.09⅜	.09½	.09¼	.09	.16.03	.13¼	.08	.11.16	.08.93	.11.34	.15½	.07¼	.13.84	.08.80
64-66, 375 end point	.11¼	.11⅜	.11¼	.10⅝	.10¼	.10.98	.14¼	.09	.12.20	.09.81	.12.38	.16½	.08¼	.14.93	.09.84
68-70, 350-365 end point	.12	.12	.12	.11⅛	.11¼	.11.76	.15¼	.10	.12.92	.10.64	.17.60	.17½	.09½	.16.62	.11.17
Kansas:															
58-60, 437 (U. S. Motor)	.08½	.08⅝	.08½	.08	.08	.09.14	.12½	.06⅛	.10.50	.07.83	.10.00	.15	.06¼	.12.59	.07.61
North Texas:															
50-52, 450 end point	.07½	.07½	.07½	.07¼	.07	.08.44	.11¼	.06¼	.09.82	.07.12	.09.22	.13½	.05¼	.11.59	.08.05
58-60, 437 (U. S. Motor)	.08⅝	.09¼	.08⅝	.08	.08	.08.96	.12	.06⅝	.10.24	.07.72	.09.65	.14½	.06	.13.28	.07.16
64-66, 390 end point	.10⅝	.11¼	.11	.10¼	.09⅝	.10.77	.14½	.08½	.12.17	.09.42	.12.04	.16	.08	.14.61	.09.47
Pennsylvania:															
52 Naphtha	.10¼	.10⅝	.10⅝	.10⅝	.10⅝	.11.36	.13⅝	.09	.13.13	.10.61	.12.57	.16	.08⅝	.14.61	.10.53
58 Gasoline	.11¼	.11½	.11½	.11¼	.11¼	.12.24	.16	.09¾	.13.24	.11.23	.13.52	.17¼	.09½	.15.55	.11.51
60 Gasoline	.11⅝	.12⅝	.12⅝	.12¼	.12¼	.13.98	.16⅝	.10½	.13.99	.12.01	.13.91	.18¼	.10	.16.43	.12.01
64 Gasoline	.14½	.14½	.14½	.14⅝	.14⅝	.14.77	.17⅛	.11⅝	.15.66	.13.91	.16.83	.20½	.13	.18.02	.14.61
68-70 Gasoline	.16½	.16½	.16⅝	.17	.17	.17.26	.19½	.16¼	.17.79	.16.76	.20.41	.23⅛	.16	.22.54	.14.28
California:															
54-56, 437 (U. S. Motor) dom.	.09	.09	.09	.09	.09	.....	.....	.....	.....	.10.26	.....	.....	.....	.....	.....
Natural Gasoline—															
Oklahoma (Group 3):															
Grade A, 72-78, under 375 end point	.09	.09	.08⅝	.08⅝	.08⅝	.08.66	.11	.06	.09.12	.08.21	.09.13	.14⅝	.05½	.11.44	.06.82
Grade B, 76-82, 375 end point	.08⅝	.08⅝	.08½	.08¼	.08¼	.08.18	.10⅝	.06	.08.43	.07.92	.08.75	.13⅝	.05½	.11.01	.06.40
Grade C, 80-88, 350 end point	.08½	.08½	.08⅛	.07⅝	.07⅝	.07.67	.09⅝	.05⅝	.07.71	.07.64	.08.23	.13⅝	.04½	.10.33	.06.15
North Texas:															
Grade A, 72-78, under 375 end point	.09	.09	.08⅝	.08½	.08½	.08.53	.11	.06	.08.95	.08.13	.08.85	.14	.04⅝	.11.09	.06.71
Grade C, 80-88, 350 end point	.08½	.08⅝	.08¼	.07⅝	.07⅝	.07.55	.09½	.05⅝	.07.54	.07.56	.08.29	.13¼	.04⅝	.10.33	.06.29
California:															
68-80 absorption, 360-390 end point	.10	.11	.11½	.11⅛	.11¼	.....	.....	.....	.....	.10.36	.....	.....	.....	.....	.....
78-84 compression, 350 end point	.10	.10½	.10½	.10⅛	.11⅛	.....	.....	.....	.....	.11.44	.....	.....	.....	.....	.....
Blends—															
Oklahoma (Group 3):															
60-62, 450 end point	.08¼	.08½	.08½	.08¼	.07⅝	.08.50	.11½	.06⅛	.09.52	.07.51	.09.01	.13⅛	.05⅝	.11.34	.06.61
68-70, 430-437 end point	.08½	.08⅝	.08⅝	.08⅝	.08	.08.54	.11¼	.06⅛	.09.49	.07.64	.09.16	.14	.05⅝	.11.42	.06.86
Burning Oils—															
Oklahoma (Group 3):															
41-43 water white Kerosene	.04⅝	.04⅝	.04⅝	.04½	.04½	.04.49	.06	.04	.04.64	.04.35	.04.00	.05	.03⅝	.04.12	.03.93
42-44 water white Kerosene	.04½	.04½	.04½	.04½	.04⅝	.04.73	.06¼	.04¼	.04.92	.04.55	.04.24	.05¼	.04	.04.33	.04.15
Kansas:															
41-43 water white Kerosene	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04.83	.06⅜	.04¼	.05.08	.04.59	.04.36	.04⅝	.04	.04.40	.04.32
North Texas:															
41-43 water white Kerosene	.04¼	.04¼	.04¼	.04¼	.04½	.04.46	.06¼	.03⅝	.04.67	.04.26	.03.86	.04½	.03½	.03.92	.03.81
Pennsylvania:															
42 Kerosene prime white	.07	.07	.07	.07	.07	.06.71	.07⅞	.05⅝	.06.74	.06.69	.06.52	.07¼	.05⅝	.06.89	.06.24
45 Kerosene water white	.07¼	.07½	.07½	.07½	.07½	.07.04	.08	.06	.07.13	.06.96	.06.84	.07⅝	.05⅝	.07.17	.06.51
California:															
40-42 Kerosene water white	.07½	.07½	.07½	.07½	.07½	.....	.....	.....	.....	.07.50	.....	.....	.....	.....	.....
43-45, 445 Engine Distillate	.06	.06	.06	.06	.06	.....	.....	.....	.....	.07.67	.....	.....	.....	.....	.....
Fuel Oils—															
20-24 (El Dorado, Ark.) bbl.	1.10	1.15	1.20	1.20	1.20	.92.7	1.20	.72½	.90.58	.94.81	.79.55	1.00	.06	.84.80	.74.31
Kansas:															
24-26 Fuel Oil, bbl.	1.20	1.20	1.25	1.25	1.30	1.06.65	1.30	.90	1.08.65	1.04.7	1.04.06	1.15	.85	1.09.20	1.00.60
38-40 Distillate	.03⅝	.03⅝	.03⅝	.03⅜	.04⅛	.03.65	.04¼	.03¼	.03.69	.03.61	.03.24	.03⅝	.02½	.03.38	.03.10
Oklahoma (Group)3:															
24-26 Fuel Oil, bbl.	1.15	1.17½	1.17½	1.17½	1.25	.95.4	1.25	.72½	.97.30	.93.61	.95.11	1.15	.70	1.03.68	.86.54
32-36 Gas Oil	.03	.03½	.03½	.03¼	.03⅝	.02.91	.03⅜	.02⅛	.02.99	.02.84	.02.66	.03¼	.02½	.02.98	.02.35
38-40 Straw Distillate	.03⅝	.03⅝	.03⅝	.03⅝	.04	.03.50	.04¼	.03⅛	.03.54	.03.46	.03.05	.03⅝	.02⅜	.03.32	.02.78
North Texas:															
24-26 Fuel Oil	1.10	1.15	1.15	1.15	1.25	.93.2	1.25	.72½	.95.00	.91.5	.87.95	1.15	.60	1.00.60	.77.18
32-36 Gas Oil	.02⅞	.03½	.03½	.03¼	.03¼	.02.90	.03⅝	.02½	.02.99	.02.80	.02.55	.03	.02½	.02.74	.02.16
38-40 Straw Distillate	.03¼	.03½	.03½	.03⅝	.03⅜	.03.47	.04¼	.03⅛	.03.56	.03.38	.02.96	.03¼	.02½	.03.03	.02.12
North Louisiana:															
18-20 Fuel Oil, bbl.	1.05	1.10	1.10	1.10	1.15	.94.7	1.15	.85	.94.61	.94.81	.92.10	1.20	.65	1.06.00	.77.11
Gulf Coast:															
Gas Oil	.04½	.04½	.04½	.04½	.04½	.04.41	.05	.03½	.04.65	.04.18	.04.00	.05	.02¾	.04.67	.03.31
Fuel Oil, bbl.	1.60	1.60	1.60	1.60	1.65	1.61.60	1.95	1.15	1.70.60	1.52.96	1.36.96	1.60	1.10	1.54.93	1.23.60
Pennsylvania:															
30-34 Fuel Oil, gal.	.05½	.06	.06	.06	.06	.05.27	.06	.05	.05.35	.05.19	.05.40	.06½	.04⅝	.05.70	.04.38
36-40 Fuel Oil, gal.	.05⅝	.06½	.06½	.06½	.06½	.05.76	.06½	.05¼	.05.69	.05.47	.05.60	.06⅝	.05	.05.94	.05.25
California:															
27-33 Distillate	.03¾	.03¾	.03¾	.03¾	.03¾	.....	.....	.....	.....	.03.64	.....	.....	.....	.....	.....
15-20 Fuel Oil (tide water)	1.40	1.40	1.40	1.40	1.40	.....	.....	.....	.....	1.40	.....	.....	.....	.....	.....
Lubricating Oils and Wax—															
Oklahoma (Group 3):															
100 vis., 3 color, 20-25 cold test	.04	.04	.04	.04	.04	.04.89	.05⅛	.04	.05.42	.04.37	.06.06	.07¼	.04⅝	.06.67	.05.28
180 vis., 3 color, 23-28 cold test	.08½	.08½	.08½	.08½	.08½	.11.71	.15	.08½	.14.19	.09.31	.12.49	.14	.10⅝	.12.21	.12.77
200 vis., 3 color, 23-28 cold test	.10	.10	.10	.10	.10	.13.08	.16	.10	.15.25	.11.00	.13.17	.15	.12	.12.80	.13.35
180 vis., 5 color, 23-28 cold test	.07½	.07½	.07½	.07½	.07½	.10.58	.13½	.07½	.12.94	.08.31	.11.03	.12½	.10	.10.80	.11.27
200 vis., 5 color, 23-28 cold test	.09	.09	.09	.09	.09	.11.95	.14½	.09	.13.97	.10.00	.11.75	.13½	.10½	.11.54	.12.05
240 vis., 5 color, 25-30 cold test	.12	.12	.12	.12	.12	.14.04	.16	.12	.16.43	.12.70	.13.67	.15½	.12½	.13.30	.14.05
200-210 "E" Bright Stock	.29	.29	.29	.29	.29	.02.79	.29	.23	.27.42	.28.41	.26.42	.28	.23	.26.80	.24.94
124-126 White Crude Scale Wax, lb.	.05	.04⅞	.05	.05	.05	.04.46	.05⅜	.03	.04.18	.04.74	.02.54	.03	.02⅛	.02.42	.02.65
190-200 dark green 40-50 cold test	.06½	.06½	.06½	.06½	.06½	.06.76	.09	.04	.07.30	.06.24	.....	.....	.....	.....	.....
Pennsylvania:															
600 Pennsylvania Flash	.30	.32	.32	.34	.34	.27.57	.34	.20½	.27.52	.27.93	.17.80	.22	.13	.19.22	.16.34
Pennsylvania Bright Stock	.37	.38½	.38½	.40½	.40½	.36.55	.40½	.33	.37.25	.35.87	.33.37	.40	.31½	.36.06	.31.76
Gulf Coast:															
No. 3 color, 200 vis., pale	.13½	.13½	.13½	.13½	.13	.13.52	.15½	.11	.14.25	.12.81	.11.47	.12¾	.10	.13.25	.10.79
No. 5, 200 vis., red oil	.12	.12	.12	.12	.11½	.11.76	.13½	.09	.12.50	.11.05	.09.79	.10½	.09	.10.13	.09.40
California:															
200 vis., 2½-3 color	.15	.15	.15	.15	.15	.....	.....	.....	.....	.15	.....	.....	.....	.....	.....
200 vis., red, 4½-5 color	.13	.13	.13	.13	.13	.....	.....	.....	.....	.13	.....	.....	.....	.....	.....
New York Domestic Market—															
U. S. Motor Gasoline, 58-60, 437 end point	.12½	.13	.13	.13¼	.13¼	.13.16	.16⅜	.10	.14.60	.11.18	.13.88	.20	.09¼	.17.26	.10.51
Bunker Oil, 14-16 Be.	1.80	1.80	1.80	1.80	1.80	1.69.34	1.80	1.35	1.62.31	1.76.11	1.56.90	1.70	1.35	1.62.20	1.51.60
Diesel, Oil, 28-30 Be., gal.	.04.8	.04.8	.05	.05	.05	.04.87	.05½	.03½	.04.74	.04.99	.04.28	.04⅝	.03½	.04.46	.04.19
Furnace Oil, New York City	.10	.10	.10	.10	.10	.....	.....	.....	.....	.10	.....	.....	.....	.....	.....
New York Export Market—															
53-60 Motor Gasoline, cases	.26.40	.26.65	.26.65	.26.65	.26.65	.27.05	.28.15	.24.04	.27.52	.26.59	.27.41	.29¾	.25.15	.28.99	.25.83
U. S. Motor Gasoline, in bulk	.12¼	.12½	.12½	.12½	.12⅜	.13.04	.14.25	.10.05	.13.53	.12.57	.13.87	.16½	.10.05	.15.68	.13.06
Naphtha, 60° F., 59-61 Be.	.14	.14.75	.14.75	.14.75	.14.75	.14.42	.16	.12	.15.03	.13.84	.15.74	.19	.12	.18.18	.13.30
Kerosene, standard white, bulk, 40-42	.06½	.06½	.06½	.06½	.06½	.06.65	.07	.06⅛	.06.81	.06½	.06.36	.07	.05½	.06.66	.06.08
Kerosene, standard white, bbls., 40-42	.13½	.13½	.13½	.13½	.13¼	.13.65	.14	.13½	.13.81	.13½	.13.12	.14	.12½	.13.14	.13.08
Standard white, in cases, 40-42	.16.9	.16.9	.16.9	.16.9	.16.9	.16.98	.17.15	.16.9	.17.07	.16.90	.16.06	.17.15	.15.04	.16.14	.15.13
Water white, in bulk, 42-44	.07½	.07½	.07½	.07½	.07½	.07.65	.08	.07½	.07.81	.07½	.07.27	.08	.06½	.07.54	.07.00
Water white, in bbls., 42-44	.14½	.14½	.14½	.14½	.14½	.14.65	.15	.14½	.14.81	.14½	.14.15	.15	.13	.14.33	.14.00
Water white, in cases, 42-44	.17.9	.17.9	.17.9	.17.9	.17.9	.18.10	.18.5	.17.9	.18.31	.17.9	.17.14	.18.05	.16.04	.17.22	.17.06
Lubricating Oil—															
Cylinder, extra light, filtered	.44½	.44½	.46½	.46½	.46½	.43.14	.45½	.37½	.41.35	.44.87	.38.23	.40½	.36½	.39.21	.37.24
120-122 a.m.p. Wax, lb.	.06	.06	.06	.06	.06	.05.26	.06¼	.04	.04.97	.05.53	.03.25	.04	.03	.03.17	.03.34

ning, being tested; Midland Oil Co.'s No. 9 J. L. Jenkins, drilling at 420 feet; Wood Oil Co.'s No. 7 Oliver Grimes, location; Cadet Oil & Gas Co.'s No. 22 Biddle, shut down in the shallow sand without a showing; T. A. Sheridan's No. 1 Jenkins, across the road from the G. Davenport, drilling at 200 feet.

At Plano, the Lydia Oil Co.'s No. 9 Elrod, waiting on shot; J. B. Felty's No. 6 John Covington, shut down; No. 7 is a location.

In the Hardcastle area, east of Bowling Green, the New Domain Oil & Gas Co. is drilling No. 5 Hewitt deeper. It was originally finished in the first pay below the shale.

Allen County

One small pumper and two dry holes is the record made in the Allen County shallow field the past week. In the Satterfield area, on the Scottsville-Bowling Green pike, Wynn, Lowe and others' No. 16 on the E. A. Ayres tract was finished at a depth of 450 feet, 60 feet below the shale, and is estimated at 10 bbls. No. 17 is being spudded.

A semi-wildcat test drilled by the White Plains Oil & Gas Co. on the Reeves-Richardson place one-half mile south of the Frost Pool, in which a new pay sand is being developed, proved a disappointment at 306 feet and was abandoned. This concern is cleaning out No. 6 on the J. R. Hornbuckle and is starting No. 7 on the same farm.

Work and associates' No. 1 Douglass, in the southwestern portion of the county near Trammel Creek and laying between the Kerley and Walker pools, was a failure at 304 feet.

Owensboro District

In the Pellville area of the Owensboro district, the Kentucky Oil Co. made a 5-bbl. strike in No. 16 on the Amada Stewart farm at 750 feet in the Barlow sand.

The Pellville Oil Co. is rigging up to drill its No. 1 Gabbert, 400 feet east of No. 3 Brown; Thomas and others' No. 2 Thomas, drilling at 225 feet; C. E. Daugherty's No. 1 Ollie Ward is shut down with a fishing job on top of the Barlow sand; Daugherty's No. 1 Widow Crowe, fishing; No. 2 is spudding, 400 feet east of No. 1. Wood Oil Co.'s No. 2 J. A. Bartley, drilling at 650 feet. A light showing was had in a stray sand at 440 feet; I. N. Harkless' No. 2 W. T. and Earnest Bickett was progressing at 400 feet.

At Fanny's Creek on the eastern edge of Cumberland County and against the Clinton County line, Vedder Oil Co. is reported to have drilled in a 10-bbl. starter on the Doll Boles farm in the Sunnybrook sand. It is south of No. 1 Scott and adjoins the Tompkins well of the same company.

Eastern Division

During the week, the eastern division showed 9 completions, 4 of which were producers with a flush of 66 bbls., 2 dry holes and the same number of gas wells.

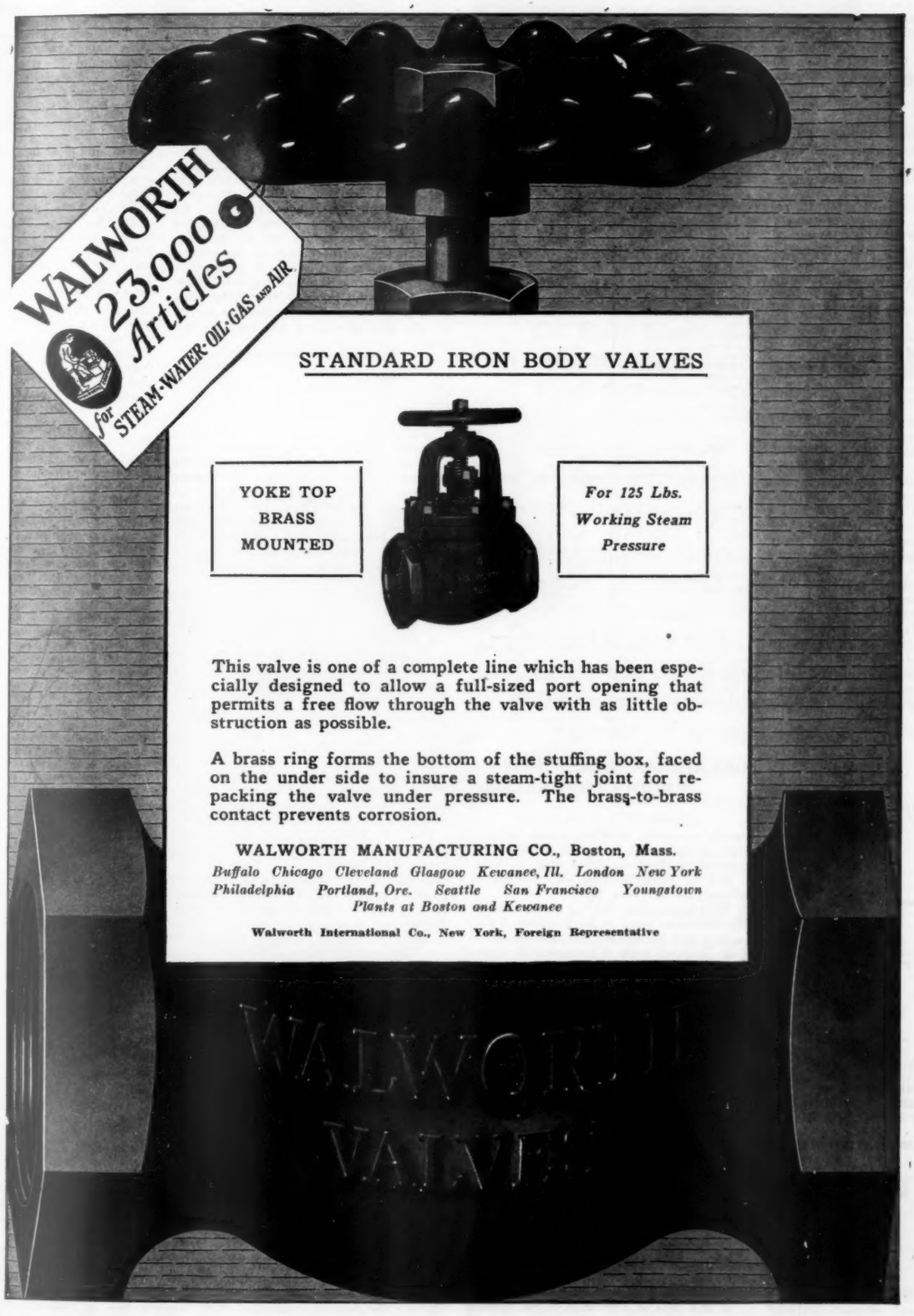
In the North Weir Field, comprised of parts of Lawrence and Johnson counties, Garrison & Townsend drilled in the banner well of the week in No. 13 on the C. K. Dobyne farm, district 22-A, in the northern extension of the Martha area, making 37 bbls. on test the first pumping. It was finished in the Weir sand at about 760 feet.

In district No. 33, Hovis & Young's No. 2 W. E. Skaggs pumped off at 2 bbls. from the Weir sand at 792 feet.

South Weir Field

In the South Weir Field, of Johnson and Magoffin counties, Bailey & Conley's and Magoffin counties, Bailey & Conley's No. 15 Frank Conley in district No. 30 tested 5 bbls. at 902 feet. In district No. 31, the Kentucky Counties Oil Co.'s No. 4 C. E. Roark No. 2 farm made 15 bbls. its first pumping.

The test drilled on the William Flint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farm in the Lakeville area in the eastern part of Magoffin County by the Petroleum Exploration has been abandoned at 1,253 feet, according to reports. This test when drilled into the Weir sand had no showing at all but after it was left standing several days, with the idea of shooting, the Weir sand filled up appreciably with oil. The showing made in this venture will encourage further testing in the vicinity and it would not be surprising if a new pool is opened.

Wayne County

In the Big Sinking district of Wayne County, the Beaver Oil Co.'s No. 7 T. C. Morrow was reported dry at 700 feet. No. 8 is spudding.

At Susie, Kennedy & Taylor's initial test on the James Stinson made 5 bbls. from the Beaver sand and extended production several locations to the southwest.

Two gassers are reported in reports received from Rowan County; McDonald & McGuire's test 12 miles northwest of Morehead made 250,000 feet of gas at 410 feet, while N. E. Kennar's test on his own land, just outside the city limits of Morehead, found gas at 342 feet, which showed a rock pressure of 50 pounds.

NEW POOLS MAINTAIN KANSAS' PRESTIGE

(Continued from Page 95)

10,821,699 bbls. last year and 14,221,115 bbls. in 1923, a drop of 3,399,416 bbls. Greenwood County made further progress. Its production last year was 9,469,932 bbls., as against 6,938,702 bbls. in the year 1923, a gain last year of 2,531,230 bbls.

Of the other counties in the State, Cowley came to the front with new pools which shot its production up from 629,513 bbls. in 1923 to a total of 2,266,340 bbls. in 1924, a gain of 1,636,827 bbls. over 1923. Montgomery County had a spasm of increased production, but as the year closed it was falling back to its old stage. It is one of the oldest producing counties in the State.

The ups and downs of production in Kansas in the past eight years are shown in the following table of production by years.

Marion County

	Bbls.
1924	2,333,176
1923	3,266,996
1922	5,636,647
*1921	7,983,494
*1920	8,932,929

Butler County

1924	10,821,699
1923	14,221,115
1922	17,733,299
1921	15,013,977
1920	18,423,716
†1919	24,060,408
†1918	36,069,670
1917	31,269,169

Greenwood County

1924	9,469,932
1923	6,938,702
1922	3,376,575

Greenwood County was not carried separately previous to 1922.

Other Counties

1924	6,809,825
1923	5,385,310
1922	5,641,125
1921	7,983,494
1920	8,089,782
1919	5,623,564
1918	7,183,800
1917	6,717,500

*Includes Elbing Field in Butler County.
†Includes Marion County.

Kansas Total Production

Since Kansas began producing oil in 1889 it has yielded 319,912,943 bbls. as follows:

Production From 1889 to 1922, Inclusive

Year	Bbls.
1889	600
1890	1,200
1891	1,400
1892	5,000
1893	18,000
1894	40,000
1895	44,430
1896	113,571
1897	81,098
1898	70,960
1899	67,570
1900	74,444
1901	179,151
1902	331,749
1903	932,214
1904	4,250,779
1905	3,450,779
1906	3,100,065
1907	2,409,521
1908	1,802,328
1909	1,263,764
1910	1,128,668
1911	1,278,819
1912	1,592,796
1913	2,275,342
1914	4,250,540
1915	4,009,329
1916	13,042,800
1917	37,986,669
1918	43,253,470
1919	29,683,972
1920	35,446,427
1921	35,749,268
1922	32,387,646
1923	29,812,123
1924	29,671,551
Total	319,912,943

A production table showing the output by important pools and by counties in the older or less productive areas accompanies this review.

KANSAS

Summary of Wells Completed During the Year 1924

County—	Com.	Prod.	Dry	Gas
Butler	41	645	27	1
Marion	17	595	10	0
Greenwood	421	39,381	90	5
Chautauqua-Elk	77	1,855	33	25
Montgomery-Wilson	117	12,575	44	15
Neosho-Allen	77	1,390	44	7
Miami-Franklin-Anderson	152	6,049	34	3
Chase	7	.....	7	...
Cowley	112	27,290	35	15
Harvey	6	225	4	...
Sedgwick	3	.....	3	...
Morris	1	.....	1	...
Coffey	13	150	9	1
Sumner	14	20	12	1
Bourbon	7	260	1	4
Russell	17	1,880	9	...
Lyon	10	65	7	1
Republic	1	.....	1	...
Rice	5	265	3	...
Barton	3	.....	3	...
Clay	1	.....	1	...
Riley	1	.....	1	...
LaBette	5	.....	4	1
Reno	1	.....	1	...
Osage	3	.....	3	...
Osborne	2	.....	2	...
Lincoln	2	.....	2	...
Rush	1	.....	1	...
Woodson	6	95	3	...
Harper	1	.....	1	...
Total	1,125	92,668	396	79
Total, 1923	1,405	61,372	535	63
Difference	280	31,296	139	16

Summary of Wells Completed by Months

Month——	Com.	Prod.	Dry	Gas
January	37	1,045	17	7
February	77	6,257	33	10
March	72	3,901	24	3
April	14	8,936	25	10
May	143	14,763	31	9
June	82	9,878	22	3
July	144	9,253	31	5
August	102	16,811	39	7
September	53	3,539	23	2
October	74	8,230	35	3
November	92	6,226	47	7
December	135	4,829	69	13
Total	1,125	92,668	396	79

Record of Previous Years in Kansas

Year—	Com.	Prod.	Dry	Gas
1923	1,405	61,372	535	63
1922	1,640	74,391	497	86
1921	1,380	95,789	353	118
1920	3,164	181,845	690	147
1919	3,446	172,449	638	177
1918	4,671	342,872	925	272
1917	3,469	325,410	559	174
1916	3,637	250,267	360	127
1915	1,088	10,258	135	341

OKLAHOMA MAKES NEW PRODUCTION RECORD

(Continued from Page 93)

erable successful field work and the production there was increased greatly. The county produced 4,383,541 bbls. in 1924, a gain of 1,122,196 bbls. over the record of the previous year.

Notwithstanding the big production of the 4,000-foot sand in the Tonkawa Field, in Kay and Noble Counties, production in that division took a pronounced slump in 1924. Kay-Noble is credited with 32,939,341 bbls. last year, as against 35,206,733 bbls. in 1923, a falling off of 2,267,392 bbls.

The Garber Field, in Garfield County, that county's one development, fell off from 2,333,214 bbls. in 1923, to 1,849,133 bbls. in 1924, a decline of 484,081 bbls.

Carter County, in which the Healdton, Hewitt, Fox, Graham, Brock, Milroy and Sholom Alechem Pools are located yielded a material increase in production over its 1923 record. The Graham-Fox area and the Sholom Alechem Pools were mainly responsible for this. The production in 1924 was 20,537,609 bbls. and in 1923, 18,019,723 bbls., a gain of 2,517,886 bbls.

The Robberson Field, which is the only one in Garvin County, showed a big decline in 1924, its production of 1,354,735 bbls. for the year, having been 694,744 bbls. less than in 1923, when it registered 2,049,579 bbls. of low gravity crude.

A new pool in Township 6s-5w, opened last year, put Jefferson County in the oil column with a production of 50,897 bbls. for the year.

Going back over a five-year period in the big producing counties of the State, it is found that Osage County holds a premier position among the producing counties of the State with a total of 155,824,214 bbls. from 1920 to 1924, both years inclusive. For the five years ending with 1923, the county produced 131,627,852 bbls. which indicates the great difference between the production in 1924 as compared with that of 1919, when there was no Burbank Field and little had been learned of the rich Wilcox sand production underlying the regular Bartlesville and other pay sands.

The record for the five years is as follows:

Osage County Production

	Bbls.
1924	38,690,662
1923	37,398,194
1922	38,491,571
1921	20,847,506
1920	20,396,281
Total	155,824,214

Creek County's production in the five-year period ending December 31, 1924, was 140,702,088 bbls. as against 131,042,082 bbls., compared with the five-year period ending December 31, 1923. In 1919 the county produced 19,934,294 bbls. That was before the big development in the southern half of the county had got under way and the production was coming from the Cushing and Shamrock and Glenn Pools, with a little scattered production. Creek County's record for the past five years has been as follows:

Creek County Production

	Bbbls.
1924	29,594,300
1923	34,711,524
1922	36,163,035
1921	20,961,619
1920	19,271,610
Total	140,702,088

Carter County, which is one of the older oil regions of the State, also shows an improvement in five-year production as compared with last year's five-year record. A total of 100,985,758 bbls. came out of that county in the five years ending with 1924, while for a similar period ending with 1923, the production was 93,816,853 bbls. The development of the Hewitt Field and several smaller pools was responsible for this increase. The Hewitt Pool was opened in 1919, but its best days came after that year and it was a big factor in 1921 when the county produced nearly 24,000,000 bbls. The production of the county, covering five years, was as follows:

Carter County Production

	Bbls.
1924	20,537,609
1923	18,019,723
1922	19,437,746
1921	23,933,483
1920	19,057,797
Total	100,985,758

The production of Okmulgee County Fields for a five-year period ending December 31, 1924, was 52,817,412 bbls.

For the five-year period ending with December 31, 1923, the production had been 56,925,744 bbls. A scrutiny of the following table will show how that once great oil region has been falling off since the big days of the Beggs Field, when it was one of the most prolific fields in the country, and at a time of high prices.

Okmulgee County Production

	Bbls.
1924	7,164,543
1923	7,326,202
1922	9,110,780
1921	11,814,561
1920	17,401,316
Total	52,817,402

The average production for the year 1924 in Oklahoma was 481,439 bbls. and for 1923, 452,092 bbls. The highest daily average for a month was in September, 543,301 bbls., while the highest daily average for a month in 1923 was 519,091 bbls., in June. The lowest daily average for a month in 1924, was 396,543 bbls. in January and in 1923, 394,589 bbls. in December. Production in December, 1924, was 122,546 bbls. per day in excess of the output of the same month in 1923.

C. A. BRALEY DIES

Charles Alvin Braley, 66, vice president of the Sinclair Refining Co., died at his home in Kansas City after a short illness. He became connected with the Sinclair oil interests in 1917 after practicing law for many years. H. F. Sinclair, president of the Sinclair Consolidated Oil Corp., Earl W. Sinclair, chairman of the board; Fletcher Farrel, vice president, and Josephy Cudahy, vice president, came from New York to attend the funeral Friday.

Venezuela Production Is 50,000 Bbls. Daily With More to Follow

A subscriber to The Oil and Gas Journal now at Maracaibo writes as follows regarding present production in that country:

In Venezuela there are three producing fields only; they are La Rosa Mene Grande and El Mene. Mene Grande is owned and controlled entirely by the Cariabbean Petroleum Co. (Dutch Shell). It has a production of about 25,000 bbls. of oil of a gravity of about 12 degrees Baume. There are three new wells being drilled in this field and locations for about 25 more in the near future. This company has very large holdings in this district and can drill a thousand more wells and have lots of land left.

The La Rosa Field is controlled by three companies, Lago Petroleum Co., Hergnedo Gulf Oil Co. (Gulf Refining) and the Venezuelan Oil Concessions, Ldt. (Dutch Shell.) The Venezuelan Oil Concessions has all of the land rights and the Lago and the Gulf all of the lake rights, and, of course, there is rivalry to see who can get the most oil. The Venequelan Oil Concessions, Ltd., has four producing wells on the lake front and seven wells in the back country about one mile from the lake and it has about 15,000 bbls. production altogether from Nos. 1, 2, 5, 6, 7, 8, 9, 11, 12, 13 and 14.

The Lago Petroleum Co. has four producing wells in the lake, all ine line, about 20 feet from the land. They have a production of about 8,000 bbls. They are Nos. 1, 3, 4 and 13. All of this oil will average about 21 Baume.

The Venezuelan Gulf Oil Co. has three wells drilled, but has no production as all of its wells are sanded up. If it can get its wells to flowing, they will possibly have a production of about 2,000 to 4,000 bbls. a day. This company has a few small tanks built and a long wharf and pipe line running out in Lake Maracaibo and is about ready to load 12,000 to 18,000-bbl. tankers which are the largest than can enter Lake Maracaibo. This company has a loading station on deep water out on the Paraguana Peninsula where it has a large tank farm. It is drilling one new well and is making concrete foundations in the lake for three more at the present time and has locations for about 10 more wells in the lake.

In El Mene, the British Controlled Oil Fields, Ltd., has a production of about 3,000 or 4,000 bbls. of about 45 Baume oil. This company has a pipe line that runs from El Mene to Lake Maracaibo, 54 miles away. It has about 15 producing wells and is working on five new ones and has location for many more.

In all, Venezuela has a production of about 50,000 bbls. of crude oil a day, fut from the looks of things now there will be much more soon.

This report is corroborated by the latest issue of the Venezuelan Monthly News-Letter which says:

"The year 1924 in the Venezuelan oil fields, the second of their commercial development on a large scale, was very successful. Thirty-nine wells were completed as producers, bringing the number up to 86. Only six wells were abandoned during the year (none of which were in proven fields) and 53 were drilling on December 31. Marketable production at the beginning of 1925 amounts to approximately 50,000 bbls. per day, or at the rate of approximately 18,000,000 bbls. per year. This amount will be very largely increased by additional transportation facilities being provided. The year 1925 promises to be one of great activity. Present operating companies will greatly enlarge their drilling programs. The Texas Co. and the Standard (Cal.) will commence drilling, and one other organization of equal importance is likely to join the drilling procession early in the year. Large additions will be made to transportation facilities during the first six months of the year.

DELTA

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Survey of Fuel Oil Industry, 1923-24

Seaboard Refineries Produce About Three-fourths. Graphs Show Output of the Different Areas of the United States

By Charles E. Bowles

In the United States in 1923 slightly over 592,000,000 barrels of oils were run to stills from which 287,000,000 barrels of fuel and gas oil were made—or an average yield of 48.5 per cent.

In 1924 approximately 680,000,000 barrels of oils were run to stills and about 319,000,000 barrels of fuel and gas oil were made—or an average yield of about 47 per cent.

In the aggregate, almost one-half of all the crude oil run to stills is fuel oil. In most refineries it is the "left over" product—and therefore occupies a unique position in the refiner' program.

Evolving from 40 years during which it produced practically nothing but kerosene and lubricating oil, through 20 years of gasoline, the oil industry is today going through a peculiar situaton in which the problem is not "product" but "price."

Makes Four Main Products

It seems that one of the "penalties" connected with the oil business is that from the same raw material it makes four essentially different major products—gasoline, kerosene, fuel oil and lubricating oil—and that each product finds its major market in an essentially different group of industries. Gasoline goes to the internal combustion engine industries. Kerosene has had to develop foreign markets and find new industrial uses. Fuel oil, being a "fuel," must compete with coal until such time as its increasing use for cracked gasoline lifts it out of its present use as a "burning fuel" into use as a source of "explosion fuel." Lubricating oil goes to all mechanical industries—and, having no competitors, has remained undisturbed.

The question of whether or not the price of the raw material of the oil industry is dominated by coal, with which only one of oil's products comes in competition, is merely a phase of the major problem—gasoline—for in our industrial fabric today gasoline is the outstanding petroleum product. Gasoline is a matter of meeting an ndustrial need—a need for which there is no present substitute. "Price making" is a matter of economics.

Fuel Oil Production

How the production of fuel oil has responded to the changing industrial conditions that have existed in the United States in the last seven years is clearly indicated by the following data covering the period beginning just before we entered the World War and ending with the close of 1924. Hereafter, in this article, the expression "fuel oil" will include both fuel oil and gas oil.

The urgent demand for fuel oil in the last year of the war is reflected in the 53.1 per cent recovery for 1918 The refinery pendulum swung away from fuel oil in 1919-20, as reflected by the 49.8 and 48.3 per cent recoveries, even though the actual production and consumption increased over the 1917-18 period. It swung back to fuel oil in 1921-22, with 51.1 and 50.6 per cent recoveries, respectively—and away from it in 1923-24 with 48.5 and 47 per cent recoveries.

In analyzing the output of refined products for the last several years one is lost in the maze of the billions of gallons of gasoline, fuel oil, kerosene and lubricating oil that have been produced. But when these gigantic amounts are changed into percentages, one is equally amazed at the narrow "range" of variation in the percentage of the total output represented by the different refined products.

Recovery Range 6 Per Cent

For example—referring to the following figures showing oils run to stills and fuel oil produced, you will note that over an 8-year period the highest recovery was 53.1 per cent and the lowest about 47 per cent—or a "range" of about 6 per cent.

Year	Runs to Stills Barrels	Fuel Oil Gas Oil Barrels	%
1917	315,131,681	155,080,000	49.2
1918	328,473,968	174,320,000	53.1
1919	364,476,934	181,600,000	49.8
1920	437,067,953	211,000,000	48.3
1921	455,879,239	230,000,000	51.1
1922	520,006,438	254,900,000	50.6
1923	592,500,675	287,480,000	48.5
*1924	680,000,000	318,000,000	47.0

*Based on Bureau of Mines' figures for 10 months. with November and December estimated.

One per cent does not seem large for a refinery to swing its "cuts" for any of its major products—and the very fact of being able to change his cuts is the refiner's "balance wheel" that enables him to meet constantly changing conditions. For the last two years we have been making fuel oil at the rate of 1,000,000,000 gallons a month. If the price of fuel oil advances, and the refiners respond with 1 per cent more fuel oil, the result would be 10,000,000 gallons more fuel oil per month.

If, in 1925, conditions were to develop that would call for the production of 53 per cent fuel oil, as in 1918, it would mean 1,350,000,000 gallons more fuel oil than would be produced on the basis of 47 per cent, which will probably be the average recovery for 1925.

Ran More to Stills

A new angle in the general situation developed in 1924 that will operate more potently in 1925. In 1923 we produced 732,000,000 barrels of crude oil and run 592,000,000 barrels to stills. In 1924 we produced about 720,000,000 barrels of crude and run about 680,000,000 barrels to stills. In other words, we produced about 12,000,000 barrels less crude and run about 88,000,000 barrels more oil to stills.

It is very probable that our 1925 production of crude oil will not exceed 700,000,000 barrels—but if we take into consideration the increase in motor vehicle registration in 1925 compared with the average increase in "oils run to stills" during the last three years, it is probable that in 1925 about 750,000,000 barrels of oil will be run to stills. In other words the probably stationary, if not actually decreasing, production of crude oil, compared with the constantly increasing amount of oils run to stills, is creating a situation that must ultimately result in a large reduction in our present stocks of crude oil.

With a stationary or a slowly decreasing supply of crude oil, we can't keep on indefinitely supplying 1,000,000,000 gallons more gasoline and 1,500,000,000 gallons more fuel oil each year—as we are at the present time.

When the "pinch" comes—and ultimately it must come—we will find our needed gallonage of gasoline, not in more barrels of crude oil, but in our fuel oil, the price of which, as a source of gasoline, will place it high above competition with coal.

Output of Different Areas

In the first 10 months of 1924 the refineries east of the Mississippi made 28.5 per cent of all the fuel oil made in the United States, as compared with 27.2 for the year 1923. The Mid-Continent-Gulf Coast refineries made 34.7 per cent of the total, compared with 34 per cent in 1923. The Rocky Mountain refineries made 4.1 per cent, compared with 4.8 per cent in 1923—and the California refineries made 32.7 per cent, compared with 34 per cent in 1923.

In the first 10 months of 1924 the outstanding fact is the production of as much fuel oil in the East Coast area (New York harbor, Philadelphia, Baltimore, Boston and Providence) as it produced in the entire year 1923. The Arkansas-Louisiana refineries made more fuel oil in these 10 months than in the preceding 12 months.

Area	Full Year 1923 Gallons	10 Months, 1924 Gallons
East Coast	2,413,000,000	2,410,000,000
Pennsylvania	201,000,000	159,000,000
Indiana	666,000,000	603,000,000
Total	**3,280,000,000**	**3,172,000,000**
Per Cent	**27.2**	**28.5**
Oklahoma-Kansas	1,265,000,000	1,092,000,000
Texas	2,118,000,000	1,974,000,000
Arkansas-Louisiana	728,000,000	799,000,000
Total	**4,111,000,000**	**3,865,000,000**
Per Cent	**34.0**	**34.7**
Rocky Mountain	584,000,000	449,000,000
Per Cent	**4.8**	**4.1**
California	4,099,000,000	3,635,000,000
Per Cent	**34.0**	**32.7**
Grand Total	**12,074,000,000**	**11,121,000,000**

In 1923 the fuel oil output of the refineries in the East Coast area, Texas and California, combined, was over 71 per cent of the total output of the United States—and in 1924 these three areas produced over 72 per cent of the total output.

It is interesting to note that the "seaboard" refineries—East Coast, Gulf Coast, Pacific Coast—produce almost three-fourths of our fuel oil, while the "inland" refineries that are located in the heart of the light oil fields, produce about one-fourth of our fuel oil.

The eight accompanying graphs clearly visualize the outstanding difference between the seaboard and the inland refineries as fuel oil producers.

Years 1923 and 1924 Compared

The production lines for 1923 and the first 10 months of 1924 for the Pennsylvania area, the Indiana area, and the Rocky Mountain area follow each other so closely that it is obvious that these areas will furnish but little of the increase of about 1,400,000,000 gallons in the 1924 output of fuel oil.

It is also obvious that the Oklahoma and Kansas refineries will produce but little more fuel oil in 1924 than in 1923.

The Arkansas-Louisiana output for 1924 should total about 950,000,000 gallons compared with about 728,000,000 gallons for 1923. The increase is largely traceable to the refineries on the lower Mississippi that handle large quantities of low gasoline, high-fuel oil grades of crude. In the Arkansas-Louisiana area the increase in production of 1924 over 1923 will be about 225,000,000 gallons.

The aggregate production of the East Coast, Texas and California in 1924 will be about 1,060,000,000 gallons more than in 1923. Of this increase the East Coast will furnish about 480,000,000 gallons—Texas will furnish about 280,000,000 gallons—and California will furnish about 300,000,000 gallons.

Conceding an increase in the Indiana area of about 65,000,000 gallons, the areas producing the additional fuel oil in 1924 would be:

Seaboard Refineries—	
East Coast	480,000,000
Texas	280,000,000
California	300,000,000
Inland Refineries—	
Indiana area	65,000,000
Arkansas-Louisiana	225,000,000
1924 increase	1,350,000,000
1923 production	12,074,000,000
1924 production	**13,424,000,000**

California Output

In 1923 California, with an increase of about 124,000,000 barrels over her 1922 output, produced about 34 per cent of all of the fuel oil made in the United States. The graph for California clearly shows what happened during the last half of 1923—and also that the production for 1924 will be substantially more than in 1923.

It is interesting to note that while California will produce about 32,000,000 barrels less crude oil in 1924 than in 1923, she will produce about 300,000,000 gallons (or 7,000,000 barrels) more fuel oil. This fact is more interesting because the California refineries will run only about 3,000,000 barrels more oils to stills in 1924 than in 1923. Thus the "passing" of California's high gravity fields in 1924 finds striking proof in the making of about 7,000,000 barrels more fuel oil from the running of about 3,000,000 barrels more oil to stills.

In California the pendulum is very definitely swinging from gasoline to fuel oil.

Comparing the graphs for California and the East Coast it is interesting to note that the down-trending curves of the fall of 1924 crossed the up-trending curves of the fall of 1923, whereas the Texas curves for the fall of 1924 trends upward.

Gasoline and Fuel Oil

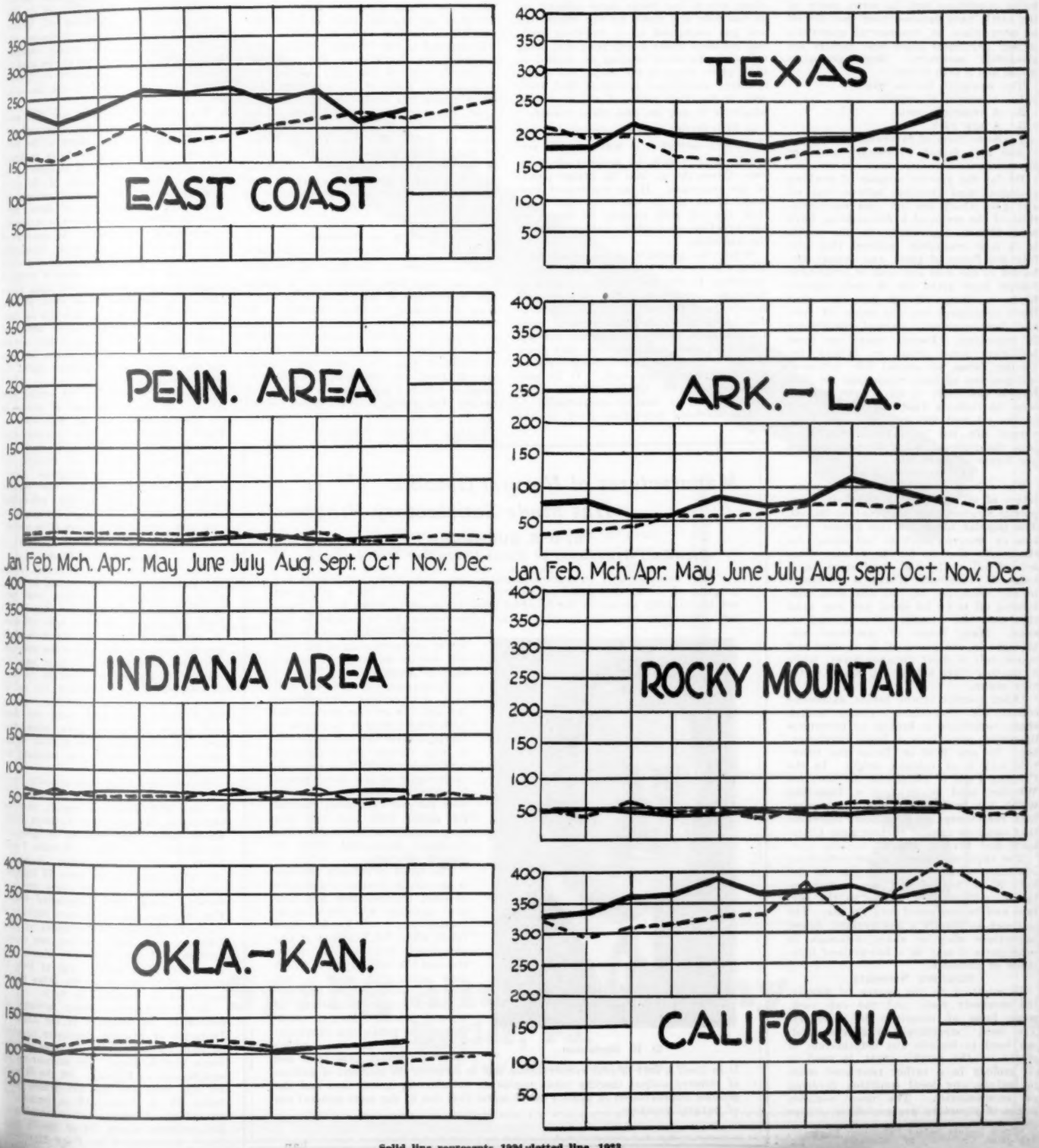
During the three years 1922-23-24 we have run about 1,692,000,000 barrels of oils to stills and have made 82 per cent of it into gasoline and fuel oil—hence it is obvious that the solution of the industry's more pressing economic problems will be found in the making and merchandising of gasoline and fuel oil.

And while it is as obviously necessary to find a market for fuel oil as it is for gasoline, it is equally obvious that as long as the motor vehicle industry occupies the large and vital place in our complex industrial fabric that it occupies today—and the larger and more vital place that it will occupy tomorrow—and as long as gasoline continues to be the only available fuel for the motor vehicle's engine—just so long will the making of gasoline be the one outstanding operation of our refineries.

And whether or not or to what extent, coal may "make" the price of crude oil is an entirely secondary consideration. The gasoline end of the oil industry has no serious competitors in serving its largest customer, the motor vehicle industry, while the fuel oil end of the oil industry meets, in coal, a kind of competition against which it can not hope

(Continued on Page 194)

PRODUCTION OF FUEL OIL-GAS OIL IN EACH OF THE EIGHT REFINING AREAS OF THE UNITED STATES IN 1923-1924



Solid line represents 1924; dotted line, 1923.

Geology in Mid-Continent Operations

Part Taken by Geologists in Developments in Oklahoma Is Described by Director Charles N. Gould of State Geological Survey

By Charles N. Gould
Oklahoma Geological Survey*

What is the theory of oil accumulation? What has the geologist to work on? How does he go about his work?

The result of the studies of very many men during more than 30 years, under many conditions and in many parts of the earth, have demonstrated that for oil to accumulate in commercial quantities in any particular place four factors are absolutely necessary. Some geologists would add a fifth factor.

The essential factors are:

1. A source of supply.
2. A reservoir rock.
3. A cap rock.
4. Some form of favorable structure.

And fifth factor, hydrostatic pressure of water.

By far the greater number of working geologists and chemists believe that oil and gas, which are but two manifestations of the series of hydro-carbons, have been formed organically in the earth. It is now commonly believed that certain low forms of plant and animal life, buried in the mud and ooze of prehistoric oceans have given up of their organic parts to form oil or gas and that these substances are the result of slow and long-continued, natural distillation of organisms. Twenty years ago most geologists were prone to believe the smaller forms of animal life, protozoa, sponges, sea urchins, corals and the like, formed the basis of oil. Later studies seem to indicate that the greater part of the oil and gas has come not from animal life, but by natural distillation from the resinous, waxy pores of certain low forms of plant life.

The Reservoir Rock

The second essential for the accumulation of oil or gas is a reservoir, some porous stratum that will contain the oil. The popular name for this porous stratum or reservoir rock is "oil sand," for the reason that by far the greater number of oil wells find production in a ledge of sandstone. There is no virtue in any sand, per se, but any sand containing oil is an oil sand, and any sand that does not contain oil is not an oil sand. Many ledges of sandstone contain gas in one place, oil in another and water only a short distance away, while at another place neither oil, gas or water may occur.

Other porous strata beside sandstone contain oil. Sometimes a course, broken shale, sometimes a broken or cavernous limestone, sometimes a loose conglomerate. In one field in Texas the reservoir rock is of volcanic origin. In the Cushing Field of Oklahoma the so-called Wheeler sand is in fact a limestone which has been correlated by geologists with the Oswego or Fort Scott limestone that outcrops on the curface near Claremore and Broken Arrow.

The third essential is a cap rock, some substance which will retain the oil and hold it in, for oil and gas, unless retained, will tend to escape to the surface and be dissipated into the air. The cap rock is usually a fine grained, dense, impervious clay or shale, although in some cases it may be a fine-grained limestone or dolomite.

Structure Necessary

In addition to the source of supply, the reservoir rock, and the cap rock, some form of structure is necessary. The term "structure" in general geology used to include any deformation of strata on the earth's crust, is used in oil geology in a rather restricted sense to include any local condition favoring oil accumulation. The most common forms of structure are anticlines, domes and faults. An anticline is an arch an up-fold in the rock, shaped like half a cigar. A dome is an anticline with its axis reduced to zero, shaped like an inverted saucer. A fault is a crevice along which the rocks have slipped up on one side and down on the other. Oil and gas contained in a reservoir rock, and confined under a cap rock and being volatile substances tending to ascend to the highest point in the rocks, will under ordinary conditions gradually find their way to the high point of the structure, whatever it may be, and there remain.

A fifth factor, usually present, but not absolutely essential, is water in the reservoir sand, which, by hydrostatic pressure, forces the oil into the higher points of the structure. If, as sometimes happens, there is no water in the sand, then the oil will usually be found in the syncline or trough, rather than in the anticline.

While the geologist is concerned with all five factors he is usually more vitally interested in the fourth; the location of favorable structure. By his general knowledge of the geology of the region he may often be justified in assuming there are source rocks from which oil and gas may have been distilled, also that there should be both the porous reservoir rock and fine-grained cap rock. It is particularly with the location of the structure that he is directly concerned.

The methods heretofore used by the geologist have not been complex. By reconnaissance in a region he first determines the general regional dip of the rocks. Next he endeavors to locate a place where the dip is reversed, that is, where the rocks dip in a direction opposite to the regional dip. If he is successful in finding such a condition he will proceed to run "levels" usually with a plane-table and alidade, and construct a contour map of the area, showing the axis or high point of the structure. After this map has been compiled the geologist, together with the manager of the company, will decide the most likely place to drill. If there are no ledges of hard rocks exposed on the surface in the region the geologist is often at a loss to locate a favorable structure, and he may be obliged to have recourse to core drilling to determine sub-surface structure.

Geology in Oklahoma

So far as I now remember, the first well discovered in the State of Oklahoma that had been located by a geologist in advance of drilling in July, 1918, was at Poteau, LeFlore County. So far as I am now informed, the first company to adopt the plane-table methods of contouring structures was the Wichita Natural Gas Co., now the Empire Gas & Fuel Co., the geological department of which I organized in 1913. The details of mapping, however, were worked out by my successor, Everett Carpenter.

The result of the contour work by the geological department of the Wichita Natural Gas Co. was the bringing in of the Augusta and El Dorado Fields of Southern Kansas in 1913-14. So successful had been the efforts of the Empire geologists in locating oil, by surface mapping, that the geological staff of this company was greatly enlarged. It had been claimed that at one time the Empire had more geologists on its staff than did the United States Geological Survey.

Beginning about 1914 and 1915 most of the larger companies organized geological departments. Many of the older oil men, however, were loath to adopt new methods, and it is claimed a few of the more conservative of the older companies are still without geologic advice. In the majority of cases, however, an oil company now expects to carry a geological department the same as it does a producing or marketing department and most managers would as soon think of drilling a well on a piece of property which had not been passed upon favorably by a geologist as he would of drilling a well on property to which the company held no title. Rarely has there been such a reversal of public opinion on any one subject as there has been on the subject of oil geology during the past decade.

The time is ripe for the writing of a history of the importance of geology in oil development in the Mid-Continent Field. First, the oil reconnaissance method, with no instrument other than Locke level, brunton and aneroid; second, the plane-table, telescopic alidade method, resulting in the now common contour map; third, the sub-surface method, where well logs are correlated and unsuspected structures often spotted, and fourth, the core drill method.

Percentage of Finds

The question is often asked. What per cent of the wells located by geologists in advance of drilling prove productive? This question is extremely difficult to answer. No two men will agree on the matter. In the old days before geology was popular and when anticlines were not hard to find, I have made the statement that 60 per cent of the wells so located found oil or gas, but not always in commercial quantities. As the years have come and gone, and more and more geologists have taken field, and anticlines are more difficult to discover, the percentage has naturally decreased.

Sometimes for my own curiosity I have attempted to list the productive oil fields in the Mid-Continent region, including Oklahoma, Kansas and Northern Texas, which have been located by geologists in advance of drilling. Usually I have found myself in deep water. In sending out questionnaires to some 75 representative geologists in the three States, I secured some very interesting results. For instance one productive anticline in Southern Kansas was claimed by three different men, while to my own certain knowledge I first saw this structure in the year 1898, which was at least 15 years before either of the other fellows happened to stumble on to it.

In 1917 Dorsey Hager published an article in the Bulletin of the American Institute of Mining Engineers in which he lists 75 productive oil pools in Oklahoma and Kansas. He summarized his conclusions as follows: Of the 75 pools, all but four are on well-defined structures, 45 on domes, 15 on terraces, 11 on undefined structures. According to his estimate about 50 of the 75 pools,

(Continued on Page 224)

*From lecture before Petroleum Engineering class, University of Oklahoma.

Manufacturer of Natural Gasoline Has Made Satisfactory Progress

By D. E. BUCHANAN

President, Association of Natural Gasoline Manufacturers

The manufacturer of natural gasoline can view with satisfaction the progress of the natural gasoline industry through the year 1924. His product has steadily grown in the favor of those to whom he looks for his market. This has been due partly to the improvement he has made in the quality of his product and to the better understanding of its uses and merits by both the refiner and the jobber.

D. E. Buchanan

The strong demand for natural gasoline experienced through the greater part of the year 1924 has been no "flash in the pan" and has not been due to any unusual or temporary condition, rather is it the natural result of the development in refining practices, coupled with the ever increasing demand for motor fuel, and the fact that competition in retail sales is based more and more on quality products.

The trend in refinery practice is decidedly toward even more efficient fractionation and natural gasoline will function to further that end. During these times when conservation of our petroleum resources is being stressed the industry as a whole may point with pride to last year's production of approximately 900,000,000 gallons of natural gasoline. Making available to the public this enormous quantity of gasoline which otherwise would have been lost is in itself a feat of real conservation, not to mention the millions of gallons of refinery output thereby made usable as satisfactory motor fuel and the general improvement in quality of all motor fuel due to the more general use of natural gasoline.

SPANG

Weldless Drilling Jars

Referring to Spang Weldless Jars one user said:

"We have used a set of your Jars for nine months drilling granite and would not trade this set now for a set of any other make of jars we know of. They are still good for much more service."

Another user said:

"We broke a great many jars drilling through Pyrites of iron. In fact, we could find none that would withstand it until we found out about Spang Weldless Jars. Since then we have been having no trouble with our Jars."

Two tough jobs for any jar—but Spang Weldless Jars are made to stand hard work. The tough, properly heat treated alloy steel, made into jars by the Weldless process, gives them the strength and wearing qualities needed so much to render safe and economical service.

What Spang Jars Will Mean to You

- Excellent Joints
- Greatly increased footage drilled.
- Elimination of jar fishing jobs.
- Reduction of drilling risks.
- Three to five times as much service as other jars.
- Increased profits.

SPANG Thread Protector

Protect your Tool Joints with SPANG Thread Protectors. Like all Spang products they guarantee absolute satisfaction and long durable service.

Spang and Company

Butler, Pa.

Sold at Leading Supply Houses Everywhere

THREE-CENT SALES TAX ON GASOLINE BEFORE WYOMING LEGISLATURE

(Continued from Page 90)

fighting campaign and bring the great deposit of oil at Salt Creek out on the market at a period when the price was low. Through the Midwest officials, this was averted and the State of Wyoming given practically the whole income from that area, rather than have the Salt Creek Field ruined.

As one means of solving the problem of more funds for highway uses from those actually using them, Mr. Ellison suggested the installation of toll gates, rather than a tax on gasoline. He cited cases where merchants and workmen in the cities, using the city streets only would be compelled to pay a large part of this tax on gasoline, yet would not derive any benefit.

"Distress Gasoline"

Another phase was brought out in the discussion that followed Mr. Ellison's talk. Last year it was possible to buy gasoline in Nebraska and South Dakota cheaper than at Wyoming filling stations, even in Casper which is a great refining center. By the public this was accepted as a sign that "the oil monopoly" was holding up the price in Wyoming.

The fact was, Mr. Ellison said, that some refiners in the Mid-Continent Fields had stocked up heavily with crude, and, after refining it found themselves on the verge of bankruptcy with storage filled with gasoline and no market. This gasoline was sold below the cost of production and was commonly referred to as "distress gasoline." A number of politicians took advantage of this crisis in the affairs of some of the refiners in the Mid-Continent and started filling stations in Nebraska and South Dakota that, being under their management, were exempt from taxation and thereby enabled to sell the gasoline without tax or overhead such as must be paid by privately financed filling stations. No business, whether selling drugs, clothing or groceries, could compete long with State ownership.

NEW POOLS IN GULF COAST AND SOUTHWEST

(Continued from Page 86)

November	6,300
December	6,820
Total	174,977

†Big Creek and Southwest listed separately.

SOUTHWEST FIELDS

Luling

January	263,500
February	252,000
March	643,250
April	604,860
May	852,500
June	1,425,530
July	1,490,759
August	1,260,677
September	946,500
October	888,080
November	993,750
December	1,066,772
Total	10,688,178

Laredo

January	111,600
February	100,800
March	117,800
April	117,030
May	126,853
June	125,400
July	130,727
August	130,541
September	134,158
October	128,309
November	129,240
December	135,997
Total	1,488,485

Somerset

January	80,879
February	70,700
March	81,251
April	74,250
May	77,186
June	75,360
July	76,446
August	83,452
September	73,050
October	80,073
November	77,580
December	80,638
Total	930,765

Calliham

January	21,700
February	21,000
March	24,800
April	24,800
May	24,800
June	23,880
July	16,864
August	20,181
September	18,450
October	17,639
November	16,170
December	16,647
Total	246,931

Rockdale-Minerva

January	16,740
February	15,400
March	17,360
April	16,650
May	17,608
June	15,780
July	22,103
August	16,802
September	15,362
October	14,911
November	14,460
December	14,384
Total	197,560

Jim Hogg County

October	4,000
November	40,770
December	76,725
Total	121,495

SUMMARY PRODUCTION BY DISTRICTS FOR 1924

Gulf Coast

District	Gross Prodn.
Batson	536,311
Blue Ridge	306,318
Barber Hill	76,114
Big Creek	186,108
Dayton	33,538
Damon Mound	525,091
Edgerly (La.)	176,165
Goose Creek	4,296,540
Humble	2,187,616
Hull	7,431,641
Jennings (La.)	240,495
Markham	82,037
Orange	4,250,757
Pierce Junction	173,644
Spindletop	351,385
Saratoga	559,881
Sour Lake	1,639,288
Vinton (La.)	2,004,369
WelshAnse La Bute (La.)	31,833
West Columbia	4,775,585
Lockport (La.)	117,326
Miscellaneous	174,977
Totals for Gulf Coast pools	30,148,019
Totals for 1923	38,516,691
Difference	368,650

‡Luling, Laredo, Somerset, Milam and Calliham, now carried separately as the Southwest fields, were included in the gross totals for 1923.

Southwest Fields

Luling	10,688,178
Laredo	1,488,485
Somerset	910,765
Calliham	246,931
Rockdale-Minerva	197,560
Jim Hogg County	121,495
Total for 1924	13,653,414
Grand total, 1924	43,801,433

Gulf Coast and Southwestern Fields Production Total by Years, 1901 to December, 1924, Inclusive

1901	3,593,112
1902	18,012,402
1903	16,146,191
1904	24,441,041
1905	34,610,882
1906	20,484,208
1907	16,241,460
1908	15,556,295
1909	10,755,299
1910	9,924,796
1911	11,402,184
1912	8,623,211
1913	8,649,152
1914	11,362,797
1915	21,198,083
1916	21,374,635
1917	23,973,694
1918	19,311,005
1919	23,839,043
1920	31,146,203
1921	*37,660,000
1922	†40,681,877
1923	‡38,516,691
1924	43,801,433
Total	509,612,492

*Includes Laredo and Somerset.
‡Includes Luling.

CRUDE PRODUCTION ESTIMATES ACCURATE

(Continued from Page 87)

ernment means that for every 100 bbls. of production included by the Government in the figures it compiles, The Oil and Gas Journal estimated 100.4 bbls., or less than one-half barrel difference in every 100 bbls.

May Be Even Closer.

It must be remembered also the Government's preliminary total of 717,000,000 bbls. may be revised. This figure was announced in the November report. The Wortham Field in Texas did not figure to any appreciable extent in production during that month but it did during December, The Oil and Gas Journal's estimates including 1,066,000 bbls. for Wortham during December. Any increase in the figures of the Government will lessen the percentage of difference between the Government figures and the total of the weekly estimates of The Oil and Gas Journal.

Since the above was written, the staff men of the The Oil and Gas Journal in every oil field of the United States have compiled the production figures for their territories for 1924. These figures were procured from practically the same sources as the Government gets its figures. These final figures were checked closely by our correspondents from all information available and from records compiled by companies producing the oil and pipe line companies which transport it.

The Oil and Gas Journal believes this compilation made by its own staff men is the most accurate possible because it knows the men who made up the figures and knows these men have been trained for years to be careful and accurate.

The total production of the United States for 1924, as shown by the final reports of staff men of The Oil and Gas Journal, was 720,731,222 bbls. The total of the weekly estimates was 719,965,592 bbls., a difference of 765,625 bbls. for the entire year or practically one-tenth of 1 per cent. In terms of bbls., the difference amounted to about 1 bbl. to every 1,000 bbls. Using an example mentioned above, if a well were actually producing 1,000 bbls., the weekly estimates of The Oil and Gas Journal for 1924 would have estimated its production at 999 bbls.

Journal's Weekly Estimate

The estimates of daily average crude oil production in all fields of the United States, as published in The Oil and Gas Journal during 1924 were as follows:

For Week Ending	Daily Average
January 5	1,933,197
January 12	1,871,143
January 19	1,884,131
January 26	1,894,772
February 2	1,921,885
February 9	1,925,165
February 16	1,903,012
February 23	1,899,421
March 1	1,895,120
March 8	1,905,255
March 15	1,925,105
March 22	1,914,190
March 29	1,918,443
April 5	1,934,254
April 12	1,933,207
April 19	1,944,995
April 26	1,969,358
May 3	1,976,404
May 10	1,972,615
May 17	1,987,837
May 24	1,989,600
May 31	2,660,000
June 7	2,003,500
June 14	2,013,737
June 21	2,006,490
June 28	1,996,232
July 5	2,019,095
July 12	2,005,027
July 19	2,006,976
July 26	2,001,931
August 2	2,030,811
August 9	2,038,751
August 16	2,046,577
August 23	2,057,319
August 30	2,048,925
September 6	2,038,608
September 13	2,032,323
September 27	2,006,475
October 4	1,990,060
October 11	1,973,215
October 18	1,961,307
October 25	1,949,365
November 1	1,947,375
November 8	1,945,122
November 15	1,939,246
November 22	1,947,354
November 29	1,956,780
December 6	1,955,335
December 13	1,957,183
December 20	1,975,656
December 27	1,929,541
January 3	1,911,730

Total 719,965,597 Bbls.

Multiplying the total of the daily averages from the week ending January 12 to and including the meek ending December 27, by seven, given a total production as estimated for those 51 weeks of 702,652,692 bbls. To this must be added five times the daily average for the week ending January 5, 1924, as there were five days in 1924 with that average; and also four times the daily average for the week ending January 3, 1925 as there were four days in 1924 in that week. This gives a total for the 366 days of the year of 719,965,597 bbls.

NEW CALIFORNIA WELL PRODUCING ICHTHYOL?

LOS ANGELES, Cal., Jan. 21.—The Searoad Asphaltum Co. of Long Beach has completed a test of the asphalt well which it recently completed in the Carpinteria district, and reports having pumped heavy base oil at the rate of 30 bbls. per day from a depth of about 500 feet.

It is reported that the company plans to process the heavy crude for the extraction of ichthyol, a valuable pharmaceutical ingredient, before marketing the product of the well as road building material. The well is said to yield considerable good gas.

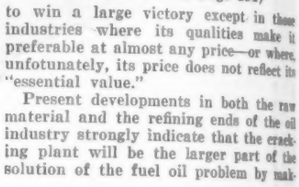
If the wells in this district yield ichthyol they will constitute the second strike of it which has been made in this State within three years. The first and perhaps most important strike was made in the Devil's Den district, north of Bakersfield, where an ichthyol refinery is now in operation.

SURVEY OF FUEL OIL INDUSTRY FOR 1923-1924

(Continued from Page 191)

to win a large victory except in those industries where its qualities make it preferable at almost any price—or where, unfotunately, its price does not reflect its "essential value."

Present developments in both the raw material and the refining ends of the oil industry strongly indicate that the cracking plant will be the larger part of the solution of the fuel oil problem by making it more valuable as a source of motor fuel than it can ever be as a competitor of coal, except for the Navy, the merchant marine, certain industries and the heating of buildings.



Production of fuel oil and gas oil in the United States in 1923-1924. Solid line is 1924; dotted line, 1923.

And under those conditions the price of fuel oil will be substantially higher than it is today—and more in keeping with its "essential value."

CURB PUMPS BARRED BY NEW YORK COURT

NEW YORK, Jan. 21.—Supreme Court Justice Arthur S. Tompkins granted an application of Frank N. McCoy, Jr., for a mandamus directing Village President Edmond Jordan of Peekskill to remove all gasoline and oil pumping stations from village sidewalks and streets.

Peekskill Village had persuaded a former Legislature to pass a law permitting the installation of gasoline tanks and pumps along the curb and sidewalks. The tanks became so numerous that the village passed an ordinance prohibiting further installation. A little later McCoy installed a gasoline pump at the curb near the center of the village, and, on being ordered to remove it, sued to compel the removal of other pumps.

"Such structures are used in the business and for the profit of their owners," Justice Tompkins said, in granting the writ, "and when placed within the lines of a public highway are an unlawful appropriation and use of the highway for private purposes. Highways are for the exclusive use of the public and not for any individual or private business for profit."

The justice granted a stay of his order to permit an appeal.

NEW GAS LINE FOR CINCINNATI

President PLilip G. Gossler of Columbia Gas & Electric Co. states a new 20-inch gas main from the western terminus of the main line from West Virginia has been laid, with necessary river crossings, connecting into the high pressure system in Cincinnati, thus supplementing former lines and making easier maintenance of even pressures throughout the distributing system.

California Refined Market in 1924-1925

Situation Beginning to Look Very Good Marketwise to the Well Established Oil Companies on the Pacific Coast. Price Indications

LOS ANGELES, Cal., Jan. 26.—The first few months of 1924 witnessed a market condition on the Pacific Coast not so very unlike that which now exists exactly a year later. The one great and essential difference between the two markets is that a year ago the stiffening in prices was due largely to the heartening effect of a distinct turn for the better in the crude production situation. The tide of flush production was receding. It had, in fact, just begun to recede and everybody was feeling more cheerful. Prices of all refined products were at rock bottom and when the change in sentiment came it was but natural a slight stiffening in prices should take place.

The stiffening was pretty spotty. There was a good rise in natural gasoline. In the late fall of 1923 the open spot market on absorption natural gasoline was 4½ to 6 cents per gallon. Quite a lot of perfectly good water white absorption gasoline produced by some of the smaller independent manufacturers in fields like Huntington Beach was pumped into the crude lines of the pipe line companies at 3 and 3½ cents per gallon.

By March 1924, absorption natural gasoline had gone up to 12 cents per gallon. Straight-run refinery gasoline had a rise of much smaller proportions than that of natural gasoline. Refinery and seaboard prices rose from about 10 cents in January, 1924, to a range of 12 to 12½ cents per gallon in the early part of April. This covered the New Navy specification and similar equally valuable special cuts.

The various grades of kerosene, both for domestic and export consumption, went contrary to the general market by exhibiting a softening tendency during January and February, 1924. The fuel distillates and fuel oil remained practically stationary. All through the period of wildest overproduction in California during the recent boom fuel oil has maintained a remarkably firm market position. This strength in fuel oil was distinctly noticeable in 1923 and was emphasized in 1924 by the drought which prevailed along the Pacific Coast. The drought crippled the production of electric power by the big hydroelectric plants and made necessary the full-time operation of all available steam-electric units. Practically all of these were fired with fuel oil, a few exceptions being plants in southern California which burned gas. This great demand for fuel oil came at a most fortunate time for the California oil industry. The demand was heaviest during the summer and fall, the period during which bulk gasoline slumped severely in price. This will be discussed later.

In connection with the California fuel oil situation in 1924 the following must also be noted. Two distinct markets really existed during the entire year. The real Pacific Coast market in the broadest sense was divided between the big California companies and the Imperial Oil Co. of Canada. The California companies included the Standard Oil Co. (California), the Union Oil Co. of California, the Shell Co. of California, the General Petroleum Corp. and the Associated Oil Co. These companies maintained a practically uniform price schedule, the prices quoted along the entire Pacific Coast being based on the Los Angeles or San Francisco tidewater price plus transportation to locality in which the oil was sold.

Los Angeles Situation

Within the major market described above there was another, much smaller but nevertheless worthy of mention. In and around Los Angeles there are a large number of small refineries. These have been notorious price cutters for years, there being among them a few shining exceptions, of course. It is certainly not the writer's wish to imply that a man in business hasn't the right to sell his goods at any price he pleases. However, it is necessary to distinguish between firms. Some are able to sell their goods at a more or less uniform and standard price because they maintain a well trained sales department which renders good service in delivering the goods sold and because they have a reputation for producing goods of high quality. Others do not produce uniform goods and are slipshod in their selling methods. Besides, they frequently do not have a selling organization. Therefore they simply offer their wares at whatever they will bring.

Because of the large number of small companies belonging to the second classification operating in the Los Angeles territory, both gasoline and fuel oil (not to mention all the intermediate products) were sold at a wide range of prices during the year 1924. The larger marketing companies lost a great deal of business in this territory because they could not afford to compete at the prices set by the group of small refiners and marketers. The small marketers, however, did not have the facilities for getting farther than a few miles from the refining centers. Consequently all through the year 1924 smaller companies sold fuel oil at anything from 90 cents to $1.20 per barrel while a few miles away at tidewater the larger companies with pipe line facilities maintained a price of $1.40 per barrel on fuel oil.

The gasoline situation was real wild. For instance in the cities of Los Angeles and Long Beach the larger companies maintained one set of service station prices throughout the year and the smaller companies together with a host of so-called "bootleg gasoline peddlers" maintained a scale of prices ranging from 2 cents per gallon below the price quoted at the time by the big companies to such weird inducements as "Seven Gallons for a Dollar and One Quart of Eastern Lubricating Oil Fee" at a time when the big companies were selling service station gasoline at 17 cents per gallon. (Both of these prices include a State gasoline tax of 2 cents.)

The broken market structure just described centered around the city of Los Angeles. There it was practically impossible for the well established companies to do business on a profitable basis for many months of the past year. The father away one got from the city the greater became the selling power of the regular marketing organizations at the established market prices. By the time a distance of about 20 miles from Los Angeles was reached the influence of the "bootlegger" was negligible.

Situation Improved

It must be borne in mind here that the condition outlined has not yet disappeared. Nevertheless it has improved very much. The spread in prices of both gasoline and fuel oil is steadily becoming less. A considerable number of small refineries promoted during the recent boom have shut down and a lot of the "bootleggers" have gone out of business. This is indirectly attested to by the large number of second-hand tank trucks of various descriptions and designs being offered for sale. So far as the small refinery competition is concerned as well as in many other ways the year 1925 promises to be very much better than 1924 was.

California oil marketers have been very much heartened during the past two weeks by two things. The first of these is the publication of the decline in United States gasoline stocks during November. Despite the fact that the stocks of gasoline in California continued to rise the decrease east of the Rockies was very marked and was especially encouraging considering that it covered the month of November. The second bullish occurrence is the wave of gasoline price increases along the Atlantic Seaboard and the South. This was, of course, foreshadowed by the strength of the Oklahoma and Texas gasoline market during the past 60 days. Everything considered, things are beginning to look very good marketwise to the well established oil companies of the Pacific Coast which have sunk enormous sums during the past three years in reserve stocks of gasoline tops and fuel oil.

No new storage is being built. Crude production in California, while still about 75,000 bbls. per day in excess of the consumption of the normal Pacific Coast market, is going steadily downward. To be sure, there are occasional upward spurts when a particularly big series of wells are brought in during any one week in flush fields like Dominguez. The long time trend is distinctly down, however. Shipments from California into the United States Atlantic Seaboard, European and South American markets are taking just about all the surplus oil at present. The year 1925 should witness a switch from a buyer's to a seller's market in California.

Prosperous Year Ahead

The present status of prices appears to indicate a particularly prosperous future for the California natural gasoline industry. During the past four months there has been a great deal of very active buying of natural gasoline by the large marketing companies specializing in the export of gasoline. Some of the blended motor gasoline now being shipped out of California contains as high as 45 per cent of natural gasoline. At present the natural gasoline manufacturers are contracting their output at prices ranging from 4 to 2 cents under the retail service station price of gasoline as sold by the Standard Oil Co., the State tax of 2 cents excepted. The Standard Oil service station price without tax is now 14½ cents. Spot natural gasoline can scarcely be obtained except in small quantities such as 1,000 or 2,000 gallons per day, from time to time. A steady supply can be assured to the oil refiner only by contracting. This is in marked contrast to the situation existing only a half year ago.

There is very little doubt that the local Pacific Coast demand for fuel oil will be strong in 1925 despite the fact there is every indication of sharply decreased consumption on the part of the power companies on account of insufficient rainfall so far this winter.

The California lubricating oil market is also in a very satisfactory condition. There have been very few price changes since last May. The demand is steady and is growing.

Summing it all up 1925 is going to be good, or all the weathervanes are blowing in the wrong direction!

WORLD'S LIQUID FUEL ASSETS SUMMARIZED IN BRITISH OPINION

From the London Petroleum Times

The end of a completed year appears to be an opportune time to take stock of the world's liquid fuel assets, both visible and potential. A complete inventory of these assets would be a somewhat difficult task, but so far as an idea can be conveyed in the limits of a short article the attempt is made here.

One of the most speculative of all the estimates that may be given is that relating to liquid petroleum resources of the world. But certain facts are known which will give at any rate a slight indication of the world's petroleum assets.

Beginning with the known resources of the United States, it can be said that the Lima-Indiana Field is approaching exhaustion, and probably not less than 95 per cent of its available oil has been taken out.

The Appalachian fields, covering the States of New York, Pennsylvania, West Virginia, southeastern Ohio, Kentucky, Tennessee and northern Alabama, which were the most productive fields in 1900, are long past their prime, and now produce no more than 7 or 8 per cent of the total United States production.

The Illinois field is believed to have passed its peak production. Other fields, such as the Mid-Continent, now the leading oil producer of the United States, the coastal plains of Texas, and Louisiana, Wyoming, Alaska, and, above all, California, are still in their early youth.

Other new fields will be discovered without doubt, but the prospects of finding large and rich new oil fields in the United States is considered to be somewhat remote.

Mexico's Possibilities

Mexico, still the second largest producer of oil, has shown a decline in production in the last two years, but he would be a rash man who would maintain that Mexico is approaching oil exhaustion.

Many good authorities are of opinion that Mexican oil field development has not yet reached maturity, and that the country is capable of a considerably expanded production.

According to the calculations of M. Goubiatnikoff this year, the Baku district of Russia contains an oil reserve of not less than 6,830,000,000 bbls. on the older fields, and something like 94,000,000 bbls. in the new section.

No recent estimates of the Grosny and other Russian fields appear to have been made, but it has been calculated that there are fully 30,000 square miles of undeveloped oil land in Russia, so that the possibilities are very great.

Persia has been described as likely to be the most extensive and productive oil region of the world. Without accepting this very optimistic view, it is fairly certain that the Maidan-i-naftun Field is not the only oil field of importance in Persia.

The output of oil from the Dutch East Indies appears to be more or less stationary. The decline in the older fields has been made good by the new Sarawak Field.

Rumanian oil fields are only partially developed, and while it may not prove another Russia in respect of oil resources, everything points to a long period of large production from that country.

Galicia probably will not increase its output of oil to any great extent, but here again it would be rash to conclude that Galician petroleum areas have been all developed.

It is not expected that Burma's petroleum industry will expand and the new

(Continued on Page 208)

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CALIFORNIA FIELD STATISTICS FOR 1924

CALIFORNIA FIELD OPERATIONS FOR YEAR 1924

By Districts

District—	Wells Completed No.	Wells Completed Bbls. Daily	Wells* Drg.	Wells* Prod.	Aban'd. Drillers	Aban'd. Prod.	New Blgs.
Kern River	10	238	4	2,159	...	...	12
McKittrick	2	50	6	284	1	...	12
Midway-Sunset	191	51,324	65	2,808	13	9	33
Elk Hills	54	19,537	16	219	5	6	30
Lost Hills-Belridge	...	.....	5	291	18	1	30
Coalinga	14	872	9	1,066	24	...	...
Wheeler Ridge	7	1,284	6	11	1	6	31
Watsonville	...	.....	...	6	...	...	6
Santa Maria	...	.....	6	300	6	...	...
Summerland	...	.....	...	135	...	...	1
Ventura-Newhall	21	8,875	36	364	21	...	31
Los Angeles-Salt Lake	...	.....	...	504	6	178	61
Whittier	...	.....	8	178	2	...	...
Fullerton	2	338	1	388	1	...	22
Coyote	3	2,175	3	202	1	...	1
Santa Fe Springs	75	21,562	18	339	31	19	15
Montebello	7	1,335	7	154	5	...	2
Richfield	7	1,954	9	179	7	...	4
Huntington Beach	55	10,262	26	283	27	...	1
Long Beach	195	114,969	64	457	67	15	31
Torrance	531	169,399	95	356	21	9	69
Dominguez	41	87,074	21	15	12	...	74
Rosecrans	21	17,330	22	4	1	...	24
Inglewood	2	365	2	1	1	...	6
Miscellaneous	...	.....	79	...	61	...	8
Total	1,238	508,944	510	10,903	336	351	1,380

By Months

1924—							
January	120	56,239	586	9,801	30	18	100
February	102	44,471	593	10,283	26	21	6
March	131	62,771	553	10,549	28	77	131
April	97	37,937	556	10,826	21	4	70
May	150	56,451	514	10,900	30	3	122
June	88	32,209	549	11,063	32	6	120
July	137	55,975	504	11,305	32	8	120
August	100	23,954	488	11,080	37	1	9
September	95	27,473	452	11,169	27	4	9
October	84	21,534	456	11,282	24	13	9
November	62	33,130	434	11,258	30	50	6
December	72	46,800	432	11,319	18	35	7
Total 1924	1,238	508,944			336	351	1,380
Total 1923	980	1,376,279			293		1,137
Total 1922	801	524,397			304		1,179
Total 1921	684	187,567			182		1,001
Total 1920	587	169,500			159		916
Total 1919	558	114,870			211		691
Total 1918	597	126,925			155		697
Total 1917	749	138,796			162		703
Total 1916	619	103,765			214		671
Total 1916	325	75,385			175		170
Total 1914	438	176,395			139		324
Monthly average 1924	103	42,412	510	10,903	49		110
Monthly average 1923	82	114,690	769	8,928	34		111
Monthly average 1923	67	43,700	605	9,410	17		111
Monthly average 1921	57	15,631	536	9,435	14		83
Monthly average 1920	49	14,126	403	9,299	13		77
Monthly average 1919	47	9,573	340	8,774	18		58
Monthly average 1918	50	10,577	362	8,210	12		58
Monthly average 1917	63	10,690	361	7,398	14		56
Monthly average 1916	52	8,647	338	6,542	18		58
Monthly average 1915	28	6,282	163	6,016	15		14
Monthly average 1914	37	14,700	222	6,867	11		13

*Monthly average.

Santa Fe Springs
Crude Production 1921-1924 Inclusive

1921—	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
January	2,400	77	1	77
February	2,400	86	1	86
March	2,200	71	1	71
April	2,000	67	1	67
May	2,100	68	1	68
June	2,000	67	1	67
July	2,200	71	1	71
August	2,000	65	1	65
September	1,900	63	1	63
October	2,000	65	2	32
November	68,000	2,267	3	755
December	119,000	2,839	3	1,279
Total	208,200	570		
1922—				
January	132,371	4,270	3	1,423
February	116,849	4,137	3	1,379
March	133,243	4,298	4	1,074
April	202,950	6,765	4	1,691
May	288,491	9,306	7	1,329
June	402,003	13,400	10	1,340
July	480,811	15,510	15	1,034
August	984,249	31,750	25	1,270
September	1,279,166	42,639	45	948
October	1,817,747	58,637	58	1,011
November	2,414,444	80,481	70	1,150
December	2,781,631	89,730	70	1,282
Total	11,032,955	30,227		
1923—				
January	2,835,197	91,122	78	1,168
February	3,081,688	110,060	82	1,342
March	4,719,456	152,241	93	1,637
April	6,119,535	203,988	92	2,193
May	6,828,385	220,270	117	1,882
June	7,578,882	252,629	140	1,804
July	9,232,717	297,830	167	1,783
August	9,998,169	322,522	193	1,671
September	9,439,874	314,662	233	1,356
October	8,004,471	258,209	247	1,045
November	6,419,185	213,973	277	772
December	5,533,616	178,504	307	581
Total	79,781,275	218,579		
1924—				
January	4,378,179	138,006	310	445
February	3,066,520	105,742	321	329
March	2,682,741	86,540	333	260
April	2,181,404	72,713	331	220
May	2,149,880	69,351	341	203
June	1,831,467	61,049	335	182
July	1,846,421	59,562	343	174
August	1,797,595	57,987	345	168
September	1,700,493	56,683	353	161
October	1,702,171	54,909	355	155
November	1,592,924	53,097	348	153
December	1,569,870	50,641	339	149
Total	26,309,655	71,834		

Rosecrans Crude Production, 1924

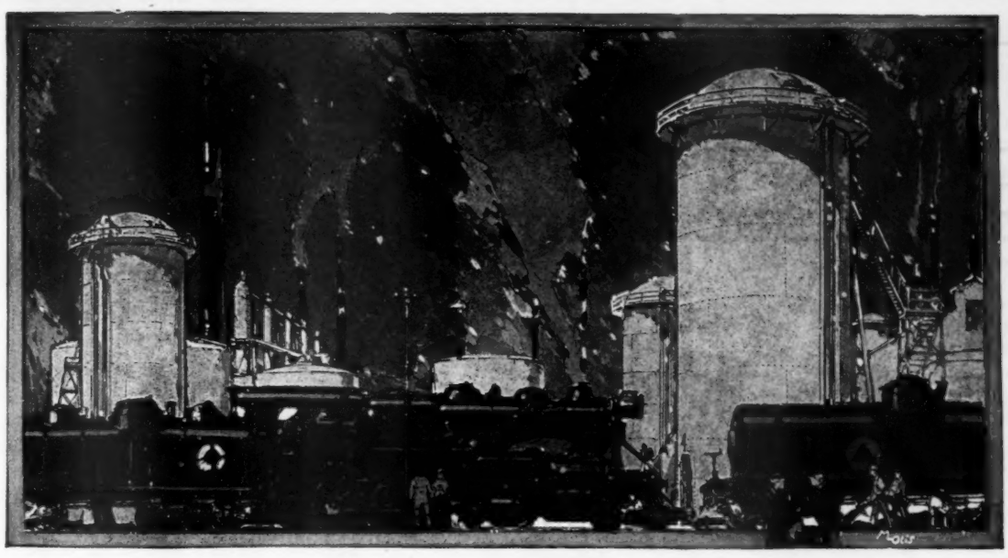
1924—	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
May	18,801	606	1	606
June	21,225	708	1	708
July	20,831	666	1	666
August	35,464	1,143	2	572
September	77,915	2,597	5	519
October	71,366	2,302	9	256
November	129,255	4,309	15	287
December	236,785	7,638	4	1,909
Total	611,432	1,671		

Dominguez
Crude Production 1923-1924, Inclusive

1923—	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
September	35,803	1,193	1	1,193
October	41,682	1,345	1	1,345
November	40,477	1,348	1	1,348
December	39,736	1,282	1	1,282
Total	157,698	5,168		
1924—				
January	56,851	1,834	2	917
February	41,843	1,443	3	481
March	119,285	3,848	5	770
April	216,881	7,229	7	1,033
May	266,112	8,584	7	1,226
June	286,025	9,534	9	1,059
July	519,600	16,761	15	1,117
August	740,414	23,884	20	1,194
September	900,620	30,021	32	1,063
October	1,009,852	32,576	35	1,116
November	1,013,006	33,767	29	1,164
December	1,641,042	52,937	15	3,529
Total	6,811,531	18,611		

Long Beach
Crude Production 1921-1924, Inclusive

1921—	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
January	.....	...	..	...
February	.....	...	..	...
March	.....	...	..	...
April	.....	...	..	...
May	.....	...	..	...
June	.....	...	..	...
July	.....	...	..	...
August	5,000	161	1	161
September	7,500	250	1	250
October	12,552	405	3	135
November	23,886	796	5	159
December	26,650	860	5	172
Total	75,588	494		
1922—				
Jauary	31,662	1,021	9	113
February	99,565	3,556	11	323
March	190,594	6,148	15	409
April	261,602	8,720	36	242
May	795,504	25,661	46	557
June	1,288,054	42,935	68	631
July	1,869,086	60,293	85	709
August	2,358,828	76,091	103	738
September	2,661,765	87,059	115	757
October	2,779,285	89,654	127	705
November	2,933,295	97,776	127	770
December	3,341,355	107,786		
Total	18,580,695	50,851		
1923—				
January	3,733,355	120,431	153	787
February	3,678,400	131,371	163	806
March	4,302,120	138,778	173	802
April	4,392,847	143,095	174	822
May	5,106,415	164,723	189	871
June	5,794,199	193,140	196	985
July	6,139,381	198,041	213	930



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THE impetus just given the Oil Industry is resulting in the placing of thousands of idle tank cars, storage tanks and other equipment back into active service. Much of this equipment is telling a dramatic, timely story of costly "economy." Protection—paint—for much of this equipment had been bought by the barrel, not by the experience and manufacturer's name back of it. Vibration, expansion and contraction, abrasion and weather opened the door to the Metal Marauders—Rust, Pitting and Corrosion.

Will you let these three vandals repeat their deadly work again through a failure to specify the paint products especially manufactured for the oil industry by a company with years of experience and a conscientious policy of making paint worthy of advertising under the maker's name? The Cook Paint Company, with a thorough knowledge of the problems of paint protection for the oil industry, offers a special product for every need—and at a fair price which brings real economy with its resultant service and durability.

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Hard Drying Black
Stencil Paste
Carbon Black
Interior Tank Paint
Graphite Paints
Red Oxide Paint
Metallic Brown Paint
Gas Proof Tank Paints
Aluminum Tank Paints
Practical Painters' Paint
Floor Enamel
Barrel Paints
Drum Enamels
Industrial Service Enamels
Machine and Engine Enamels
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Still Head Aluminum Paint
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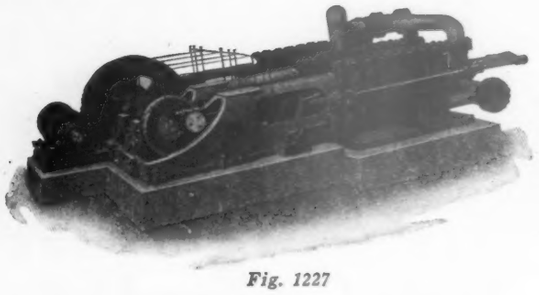


Fig. 1227

The Ranger

Built Specially for the Heaviest Pipe Line Work

5 x 18″ Horizontal Power Pumps for 900 lbs. working pressure. Capacity 828 barrels per hour. 10″ suction and 8″ discharge connections.

Drive—either right or left hand, and on end or top of frame.

Sizes

5″-5½″ x 18″ and 5″-5½″-6″-6½″ x 24″.

We will be glad to describe these pumps in detail to any engineer on receipt of his request.

NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices:

NEW YORK PHILADELPHIA PITTSBURGH CLEVELAND
TULSA HOUSTON DENVER

August	6,659,351	214,818	227		946
September	7,327,535	240,918	266		906
October	7,580,339	244,527	289		846
November	7,254,009	241,800	297		814
December	7,042,510	227,178	329		691
Total	68,810,361	188,522			
1924—					
January	6,778,037	218,646	362		604
February	6,351,371	219,013	318		575
March	6,104,570	196,922	400		492
April	5,275,312	175,844	411		428
May	5,172,472	166,854	453		369
June	4,785,363	159,512	450		354
July	4,778,989	154,162	489		315
August	4,620,041	149,033	489		305
September	4,279,352	142,645	503		284
October	4,228,968	136,418	510		267
November	3,853,934	128,464	514		2bo
December	3,893,593	125,600	457		275
Total	60,122,002	164,268			

Huntington Beach Crude Production 1921-1924, Inclusive

	Production— Monthly	Daily	No. of Wells Prod.		Daily Prod. Per Well
1920—					
January	.....	..	..		..
February	.....	..	..		..
March	.....	..	..		..
April	.....	..	..		..
May	.....	..	..		..
June	.....	..	..		..
July	.....	..	..		..
August	2,000	65	1		65
September	1,500	50	1		50
October	9,000	290	2		145
November	18,000	600	2		300
December	10,000	323	2		161
Total	40,500	265			
1921—					
January	14,000	452	3		150
February	33,234	1,187	5		237
March	97,000	3,129	6		522
April	141,234	4,708	11		428
May	174,057	5,615	13		432
June	166,207	5,540	13		426
July	180,849	5,834	18		324
August	224,202	7,232	32		226
September	251,197	8,373	33		254
October	385,637	12,440	49		254
November	405,241	13,508	60		225
December	445,954	14,386	64		225
Total	2,518,812	6,901			
1922—					
January	455,130	14,682	70		210
February	459,216	16,400	71		231
March	684,086	22,607	80		276
April	645,024	21,501	90		239
May	695,981	22,451	105		214
June	755,643	25,188	116		217
July	837,531	27,017	124		218
August	850,346	27,430	136		202
September	977,824	32,594	141		231
October	1,276,199	41,168	155		266
November	1,573,230	52,441	158		332
December	1,959,173	63,199	153		200
Total	11,169,383	30,601			
1923—					
January	2,492,012	80,387	159		506
February	3,001,732	107,205	161		666
March	3,413,770	110,122	152		724
April	3,396,845	113,228	153		740
May	3,053,150	98,489	167		590
June	2,928,352	97,612	178		548
July	3,417,080	110,228	209		527
August	3,242,053	104,582	212		493
September	2,685,834	89,528	214		419
October	2,445,809	78,897	222		355
November	2,200,267	73,342	223		329
December	2,075,738	66,959	265		253
Total	34,356,642	94,125			
1924—					
January	1,986,723	64,088	278		231
February	1,735,201	59,835	267		224
March	1,733,090	55,906	271		206
April	1,540,845	51,362	275		187
May	1,506,100	48,584	274		177
June	1,382,184	46,073	271		170
July	1,340,202	43,232	287		151
August	1,290,901	41,642	285		146
September	1,238,214	41,274	299		138
October	1,261,381	40,690	299		136
November	1,217,725	40,591	296		137
December	1,300,954	41,966	283		148
Total	17,533,430	47,906			

Santa Fe Springs Development Work

	Comp.— No.	Output	Wells— Drg.	Prod.	Abd.	New Rigs
1921—						
January	...	.....	4	1	...	...
February	...	.....	4	1	...	...
March	...	.....	5	1	...	2
April	...	.....	3	1	...	...
May	...	.....	4	1	...	...
June	...	.....	4	1	...	...
July	...	.....	4	1	...	...
August	...	.....	4	1	...	...
September	...	.....	4	1	...	...
October	1	2,095	3	3	...	1
November	1	351	9	3	...	19
December	...	.....	27	3	...	8
Total	2	2,446				30
1922—						
January	...	.....	34	3	...	9
February	...	.....	42	3	...	8
March	1	3,692	46	4	...	12
April	1	4,515	55	4	...	5
May	3	7,315	61	7	...	28
June	3	1,356	83	10	...	31
July	8	2,053	94	15	...	19
August	10	18,415	104	25	1	22
September	18	24,255	111	45	...	27
October	20	27,517	109	58	3	28
November	16	30,936	124	70	3	49
December	6	14,387	149	70	3	18
Total	86	136,440			9	259
1923—						
January	12	20,770	175	78	1	32
February	14	45,460	172	82	3	34
March	13	51,353	179	93	4	44
April	15	60,292	199	93	2	12
May	17	55,821	212	117	...	22
June	26	99,896	205	140	...	17
July	29	89,979	202	167	11	31
August	21	64,578	196	193	3	16
September	30	76,711	182	232	7	17
October	29	54,872	159	247	5	7
November	43	46,079	106	277	6	7
December	32	18,930	74	307	7	4
Total	281	684,741			49	273
1924—						
January	20	8,881	55	310	8	5
February	22	7,115	37	321	1	...
March	11	3,613	24	333	8	6
April	3	210	21	331	2	4
May	8	636	21	341	2	4
June	2	374	16	336	4	1
July	2	378	9	343	7	...
August	2	691	10	346	...	...
September	4	367	7	353	...	1
October	...	.....	7	355	4	...
November	1	516	5	348	4	1
December	...	.....	6	354	6	...
Total	75	21,562			60	22
Total to date	444	844,189			109	295

Domingues Development Work

	Comp.— No.	Output	Wells— Drg.	Prod.	Abd.	New Rigs
1923—						
September	1	1,250	10	...	...	1
October	...	.....	12	1	...	...
November	...	.....	12	1	...	...
December	...	.....	10	1	...	1
Total	1	1,250				1
1924—						
January	1	1,547	12	2	...	4
February	1	1,400	18	3	...	...
March	3	3,545	19	6	...	1
April	2	4,456	33	7	...	1
May	...	.....	31	7	...	...
June	2	3,269	23	9	3	...
July	6	13,004	28	15	...	4
August	5	8,050	17	20	6	3
September	5	5,801	16	22	5	5
October	2	5,241	29	25	1	11
November	4	8,683	30	29	...	1
December	10	32,078	27	38	...	1
Total	41	87,074			13	74
Total to date	42	88,324			13	86

Rosecrans Development Work

	Comp.— No.	Output	Wells— Drg.	Prod.	Abd.	New Rigs
1924—						
May	1	819	8	1	...	13
June	...	.....	16	1	...	7
July	...	.....	26	1	...	12
August	1	1,134	30	2	...	14
September	3	2,460	48	5	...	16
October	4	1,632	49	9	...	1
November	8	8,648	38	15	...	6
December	4	2,577	51	17	...	1
Total	21	17,330			1	94

Long Beach Development Work

	Comp.— No.	Output	Wells— Drg.	Prod.	Abd.	New Rigs
1921—						
January	...	.....	...	...	...	...
February	...	.....	1	...	...	1
March	...	.....	2	...	...	...
April	...	.....	2	...	...	1
May	...	.....	2	...	...	...
June	...	.....	4	...	...	1
July	...	.....	11	...	...	12
August	1	310	20	1	...	21
September	...	.....	31	1	...	5
October	2	611	32	3	...	6
November	2	2,052	35	5	1	6
December	1	305	45	5	...	14
Total	6	3,278			1	81
1922—						
January	3	1,201	49	8	...	8
February	3	950	60	11	...	14
March	7	3,055	63	19	...	19
April	7	6,195	68	26	1	23
May	13	19,027	70	36	1	23
June	10	18,656	80	46	1	23
July	24	33,131	82	68	1	46
August	18	23,732	98	82	3	37
September	26	32,712	111	103	3	47
October	18	20,706	129	115	1	58
November	18	29,115	157	127	3	46
December	13	26,556	180	137	4	51
Total	160	215,036			16	385
1923—						
January	30	65,569	202	156	7	31
February	9	16,709	219	152	5	28
March	22	35,698	240	173	5	43
April	14	32,878	240	174	10	34
May	14	28,819	249	189	8	28
June	13	28,480	265	198	2	20
July	20	47,042	269	212	7	46
August	18	45,743	264	227	3	31
September	31	50,916	256	266	4	23
October	36	53,909	216	289	9	1
November	19	23,420	161	297	10	13
December	24	26,795	146	329	3	14
Total	250	455,978			73	314
1924—						
January	28	25,631	131	363	2	9
February	26	21,424	117	361	9	1
March	21	11,510	101	400	3	12
April	18	7,749	90	411	10	7
May	28	15,886	67	453	7	...
June	10	6,313	66	460	5	1
July	23	12,852	49	489	6	1
August	11	4,748	40	489	6	1
September	10	2,996	33	503	4	...
October	12	3,856	27	510	11	4
November	5	1,060	26	514	14	...
December	3	944	25	525	3	...
Total	195	114,969			82	60
Total to date	611	789,261			171	840

Huntington Beach Development Work

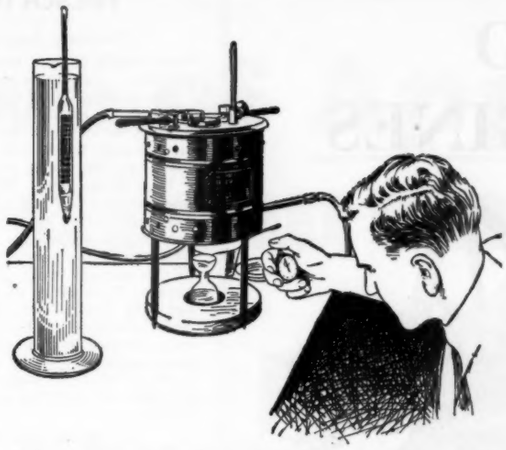
	Comp.— No.	Output	Wells— Drg.	Prod.	Abd.	New Rigs
1919—						
December	...	.....	1	...	...	1
Total			1			1
1920—						
January	...	.....	1	...	...	...
February	...	.....	1	...	...	...
March	...	.....	1	...	...	...
April	...	.....	1	...	...	...
May	...	.....	1	...	...	1
June	...	.....	3	...	...	6
July	...	.....	4	...	...	...
August	1	97	4	1	...	...
September	...	.....	4	1	...	...
October	1	533	10	3	...	1
November	...	.....	19	3	1	10
December	...	.....	29	3	...	...
Total	2	630			1	48
1921—						
January	1	500	33	3	...	5
February	2	1,300	34	5	1	5
March	1	1,000	45	6	3	10
April	5	1,515	48	11	1	1
May	4	2,346	63	13	...	20
June	5	1,541	77	13	...	1
July	6	2,038	79	15	3	14
August	13	3,353	81	23		

(Continued on Page 206)

TAG
Oil-Testing Instruments

STANDARD WHEREVER OIL IS TESTED

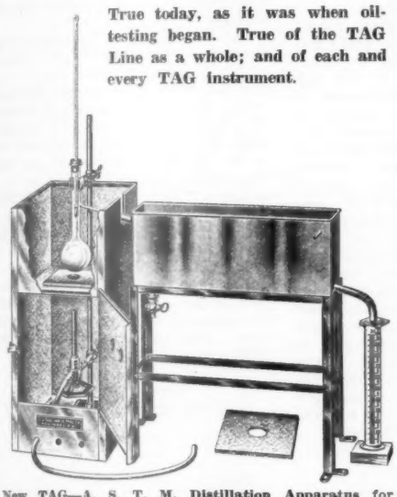
True today, as it was when oil-testing began. True of the TAG Line as a whole; and of each and every TAG instrument.



Saybolt Standard Universal Viscosimeter. Electric, gas or steam heating equipment. Bath temperature accurately regulated regardless of means of heating. Separate condenser bath and stand. Improved protective shield. Adopted by A. S. T. M., U. S. Gov't, N. P. A. and A. P. I.

The Tag Line Is Complete

These are only a few TAG instruments, picked more or less at random, as for a show window. The full TAG Line of standard instruments includes devices for the making of every test—for making it in exact accordance with standard procedure. Every TAG instrument conforms to official specifications. And, needless to say, every TAG instrument represents the utmost in precision, durability and operating convenience.



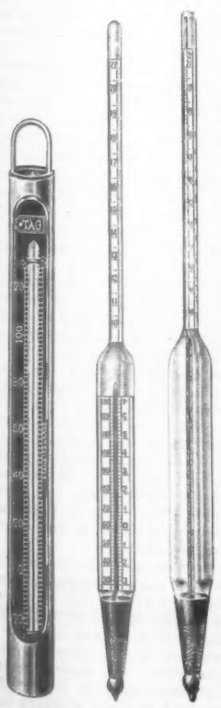
New TAG—A. S. T. M. Distillation Apparatus for gasoline, naphtha, kerosene, similar petroleum products, turpentine and other paint thinners. The recognized standard for all distillations. Conforms to specifications of U. S. Gov't, A. S. T. M. and A. P. I. Improved shield protects Engler flask from draughts and assures accurate, reproducible determinations. New condenser box provides greater bath capacity and uniform condenser-bath temperature.

TAG—A. S. T. M. Standard Pensky-Martens Closed Tester for determining the flash points of fuel oils. Design and construction standard; workmanship superior. Conforms to specifications of U. S. Gov't and A. S. T. M. (Serial D-93-22,)

Improved Form TAG—A. S. T. M. Cleveland Open Tester for determining flash-and-fire-points. Conforms exactly to specifications. (Serial D-92-21T.)

Saybolt Standard Universal Chronometer for determining color-shades of gasoline and kerosene—Adopted by A. S. T. M. (Serial D-156-23T), U. S. Gov't and N. P. A. The recognized standard for this work. Lately improved.

TAG Closed Tester for determining the flash point of volatile flammable liquids—Adopted by the A. S. T. M. (Serial D-56-21), the U. S. Gov't, Nat'l Paint, Oil and Varnish Ass'n and Nat'l Varnish Mfrs. Ass'n.



Thermometers, hydrometers, etc. in all ranges, sizes and forms. Glassware, accessories, etc.

Conradson Carbon Residue Apparatus for lubricating oils—Adopted by A. S. T. M. (Serial D-47-18), U. S. Gov't, N. P. A. and A. P. I. This efficient, easily operated and moderately priced instrument meets every requirement of the testing laboratory.

TAG—A. S. T. M. Centrifuges with Protecting Dome, hand or electric power, with Goetz Arm Attachment for 100-cc. tubes. Conform to latest specifications of Gov't and A. S. T. M. Extremely rugged construction. Guaranteed to give 1500 RPM. Parts carried in stock. **TAG—A. S. T. M. Tubes**—made in exact accordance with A. S. T. M. requirements. "Pyrex" tubes made exclusively for TAG.

TAG—A. S. T. M. Cloud and Pour Test Apparatus. The standard "cold test" apparatus. Four determinations can be made simultaneously. Compact and convenient.

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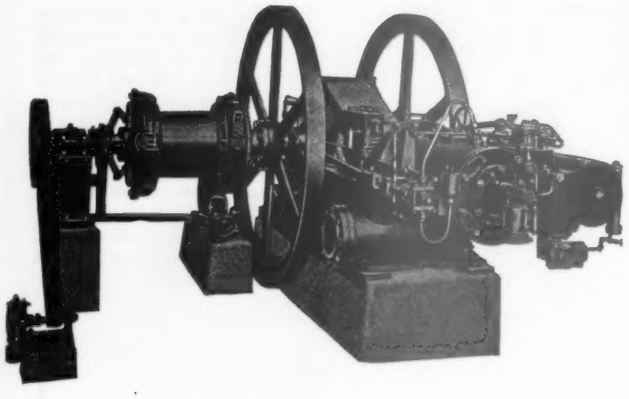
18 TO 68 THIRTY-THIRD ST., BROOKLYN, N.Y.

Insist on Mercury Thermometers with the TAG-Hespe RED Reading Column

TAGLIABUE MFG. CO. N.Y.

SINCE 1769

REID
OIL ENGINES



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DRILLING
POWER

Tools and Bailers can be handled quickly and easily.

SPEED

Drilling time equals or betters that made by steam in the same territory.

ECONOMY

Estimated savings on one well are as high as twelve or fourteen hundred dollars.

Write for Bulletin No. 26

Reid
TRADE MARK REGISTERED

Joseph Reid Gas Engine Company
Oil City, Pennsylvania, U. S. A.

Branches and Agencies—Marietta, Ohio; Logan, Ohio; Newark Ohio; Ft. Recovery, Ohio; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Bradford Supply Co., Robinson, Ill.; Frick & Lindsay Co., Bradford, Penna., and Kentucky Distributors; S. R. Shoup, 708 Pacific Electric Bldg., Los Angeles, Cal.; Oklahoma, Kansas, Texas, Arkansas and Wyoming, Frick-Reid Supply Company, Tulsa, Okla., and Branches.

Branch Shop—TULSA, OKLA.

AMERICAN SURVEY OF FRENCH OIL MARKET

(Continued from Page 158)

leum should be kept out of international politics.

"In speaking of oil in national politics," he says, "it should be said in justice to some of the men who are prominent in the oil industry today, that the majority of the American people are laboring under a false impression. They have the impression that the men in the oil business are little better than plunderers of the country's God-given resources, speculative adventurers for burglarizing the heritage of this nation, which is both harsh and unjust. To produce oil products requires not only capital but brains, enterprise and shrewdness. The oil men are, as a rule, turning raw products into usable goods quite as readily as the manufacturers of cotton or woolen goods and most of them are faily honest and doing the best they can.

Banks Can Assist

"The banks should be of great assistance to the petroleum industry which will look to the American banker for more than pecuniary assistance. It will ask for leadership such as the enterprises of England received from their bankers in the first quarter of the nineteenth century. As the bulletin of the American Institute of Banking says, 'already American banking has burst its fetters of provincialism, and there is no better field for the exercise of its newly freed energies than in the industry which has petroleum as its basis. With the sources of supply under American control, with the distributing depot and installations located at advantageous points along our extended coast line, and scattered over the surface of the globe, the shipping of every nation will pay us imperial tribute. Commerce and industry throughout the world will feel the impulse of new life and our domestic conditions will feel the influence of these stabilizing factors."

LAWS GOVERNING DELIVERY OF FLUIDS

(Continued from Page 162)

The p_1, z_1 v_1 are quantities corrosponding to section A, and p_2, z_2, v_2 are the quantities at section B.

Under conditions of steady flow the total amount of mechanical energy contained in the volume AB remains constant; i.e., the total mechanical energy gained by the volume AB by the entry of moving liquid at A during any time is equal to that lost by it at B during the same time.

The gain of mechanical energy passing at A is:

$$W(z_1+v_2/2g+p_2/w)$$

That is: it is equal to the sum of the elevation head, the velocity head, and the pressure head.

The mechanical energy lost by AB is made up of two parts; that passing B and that dissipated into heat between A and B. The value of the former is:

$$W(z_2+v^2_2/2g+p_2/w)$$

Let the latter be represented in amount by K; then:

$$W(z_1+v^2_1/2g+p_1/w)= W(z_2+v^2_2/2g+p_2/w)+K \quad \text{or}$$
$$z_1+v^2_1/2g+p_1/w= z_2+v^2_2/2g+p_2/w+H$$

in which H is K/W.

This is Bernoulli's Theorem, or the general equation of energy for steady flow. It is obviously an expression in potential phase inasmuch as each of the quantities is in this phase. The proper application of the theorem to the conditions presented by the gravity solution tank gives $v=\sqrt{2gh}$, which is Torricelli's Theorem.

Time Required to Empty a Vessel

154. This problem belongs quite properly along with the presently discussed propositions in hydromechanics. It is of greatest importance in the consideration of volumetric control reservoirs represented by the type rigid tank for gases and the type gravity solution tank for liquids. By it we obtain the pressure-time relation given in Article 80, paragraph (a); to-wit:

$$P=KT^n$$

The complete solution of the problem with discussion and illustrated application will be given when we consider the details of this class of reservoirs.

Enery-Pressure-Volume Relation

155. An equation between energy and pressure-volume for the gravity solution tank can be obtained from the general principles in mechanics. It will naturally be expressed in potential phase.

Figure 155 represents a tank with free surface A originally standing at the level S_1 above the orifice level O. At this time the center of mass of the fluid stands at C_1, a distance h_1 above the level O. The pressure at the upper side of the orifice is P_1 when the liquid surface is at S_1. As flow takes place, S_1 and P_1 change to some new values S_2 and P_2. The surface lowers in accordance with the relation expressed by the equation of the preceding article and finally arrives at O. The center of mass lowers with one-half the rate and arrives at O at the same time as the surface.

Let the volume in the tank at any instant be represented by M; thus, say,

$$Vo=M \text{ cubic feet}$$

and let h be the variable distance between the center of mass and the level O. The liquid weighs, say, W pounds per cubic foot. The MW is the total weight of the liquid in the tank at any instant. The energy due to elevation is, by Bernoulli's Theorem, equal to WMh, an amount of energy which is being completely converted into energy of motion at the orifice. Thus,

$$E=MWh \text{ (foot pounds)}$$

Let P be the variable pressure at O in pounds per square inch. Then 144 P is the pressure at O in pounds per square foot. But the pressure at O is also 2Wh; thus,

$$144\ P=2Wh$$
$$\text{or } 72\ P=Wh$$

Substituting values in the energy equation;

$$Vo \text{ for } M$$
$$72\ P \text{ for } Wh$$

then $E=72\ PVo$

But 72 is merely a constant which is determined by the units chosen for P and Vo. We may, therefore, write the general equation directly:

$$E=KPVo$$

An equation which reads: The potential energy possessed by liquid in a gravity solution tank at any instant is equal to the product of the potential pressure and potential volume multiplied by a constant.

The area under the pressure-volume curve for the gravity solution tank represents units of energy. Because problems with solution tanks always involve the quantities in potential phase, these units of energy are in potential phase.

Conclusions Regarding Laws of Mechanics

156. The laws of mechanics are very important in all problems concerning reservoirs which may be represented by the type gravity solution tank. These problems always have been in what is termed in this treatise as the potential phase and consequently the principles are ready for our use in studying fluid delivery from such reservoirs without alteration or conversion to any other form.

Temperature, as such, has no effect upon the flow of the liquid through the orifice except to cause a variation in viscosity which, in turn, will change the value of the orifice coefficient and effect the value of the constant K in delivery equations involving the function of time. In practice such effects will usually be negligible. The value of K in the pressure-volume relation is not affected by temperature changes.

These reservoirs do not involve the problem of heat as energy within them because they are of the open type. A change in the amount of heat the liquid possesses will in no way affect the potential pressure or the potential volume in their amounts. The term "potential volume" presupposes that the liquid is to be measured at some standard temperature.

The next installment continues with the laws of physics.

The Value of Approved Equipment

OCECO EQUIPMENT PROTECTS

HOW often disaster hangs over the head—hangs by a hair like the sword of Damocles!

The "hair" is the equipment on which everything depends. If it fails all is lost.

This equipment may be the brakes of your touring car—the block signal on a railroad—the equipment on your oil storage tanks.

Where lives and property depend on such equipment the use of only that of established value merits serious consideration.

Realizing the responsibility carried by OCECO Equipment our policy has always been to have it submitted to the Underwriters' Laboratories, Inc., for testing before placing on the market.

And users place full confidence in this Equipment because it *is approved* by the Underwriters' Laboratories, Inc.!

The Oil Conservation Engineering Co.

Headquarters for Tank Equipment

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809 Texas National Bank Bldg., Ft. Worth, Tex.
306 O-S Building, Casper, Wyo.
318 East 12th St., Los Angeles, Cal.
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Oceco Equipment: Gauge and Thief Hole Covers, Roof Manholes, Complete Swing Line Equipment, Breather Valves, Flame Arrestors, Fire Extinguishers.

EVAPORATION

OCECO EQUIPMENT PROTECTS

FIRE

OIL TANK OCECO EQUIPMENT
SAVES EVAPORATION AND PREVENTS FIRE

THE PATENTED CRIMP Explains MALONEY'S Popularity

The Maloney Patented Crimp gives a gas-tight fit where seams and joints come together. This feature explains Maloney's popularity

Being the first in its field, the Maloney Bolted Steel Tank had plenty of room to develop. It covered the entire field in a single stroke of master tank designing. Maloney engineers designed the Patented Maloney Crimp.

The Patented Crimp, the exclusive feature of all Maloney Tanks, takes care of extra thickness where sheets overlap, and gives to joints and seams a gas-tight, vapor-proof and scientific exact fit. This highly perfected design obviates the necessity of tedious and expensive caulking. Maloneys are more quickly erected than ordinary tanks, because of their great saving in time. And once erected, they stay tight, for Maloney construction assures absolute tightness at all times.

Since 1913, when Maloney Bolted Steel Tanks were first called to the attention of Tank Buyers, they have been looked upon as the Best. Their popularity has been added to by their other features. They are made of Keystone Copper Steel; they have Cleaning-out Openings flush with bottoms of Tanks; Maloneys are furnished with Vacuum Pressure Valves and Gas-tight Manhole Covers.

Write for descriptive circular

KEYSTONE COPPER STEEL

MALONEY TANK MFG. COMPANY
Tulsa, U. S. A.

"Alone in Quality"

12 to 3,000 Bbls. Capacity

Prompt, Dependable Export Service

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY 'ALONE'

PRODUCTION OF AUTOMOBILES IN 1924

(Continued from Page 77)

3,105,000; special Federal excise taxes paid to United States Government by automobile business, $144,000,000; number of carloads of automobile and parts shipped over railroads, 726,000; per cent of total production of specified materials used by automobile industry: rubber, 70 per cent; plate glass, 53 per cent; copper, 10 per cent; aluminum, 20 per cent; iron and steel, 10 per cent; upholstery leather, 65 per cent; gasoline consumed, 6,029,000,000 gallons; crude rubber used in manufacturing tires, 605,000,000 pounds; cotton fabric used in manufacturing tires, 191,000,000 pounds.

Some interesting figures relating to the motor bus and motor truck follow: Number of motor buses produced in 1924, 10,000; number of consolidated schools using motor transportation, 13,037; number of street railways using motor buses, 168; number of buses used by street railways, 2,500; number of railroads using motor vehicles on short lines, 174; number of railroads using motor trucks as part of shipping service, 33.

It is estimated that there are 50,512 car and truck dealers in the United States, 59,989 public garages, 67,828 service stations and repair shops and 64,233 supply stores.

Motor vehicle and exports showed a gain in 1924. The number of vehicles exported totaled 380,000, valued, including parts, engines and tires, at $265,000,000. The increase in exports over 1923 is 15 per cent, and exports amounted to 10 per cent of the production. The number of motor vehicles imported was 745.

Highway Improvement

The National Automobile Chamber of Commerce estimates that at the end of 1924 there were 455,000 miles of improved highway in the United States. The total miles of highways is 2,941,274. The latest figures by States are given as follows:

MILES OF HIGHWAY IN UNITED STATES
(Figures from U. S. Bureau of Public Roads)
Totals Are for Mileage Outside of Cities and Towns

State—	Total Mileage	Miles of Surfaced Roads Jan. 1, 1922*	Miles Surfaced During Calendar Year 1922*
Alabama	58,410	10,420	397.9
Arizona	21,227	1,233	413.5
Arkansas	74,866	3,871	873.5
California	76,889	14,275	993.2
Colorado	48,143	4,599	1,630.9
Connecticut	12,152	2,206	187.7
Delaware	3,933	448	479.3
†Georgia	†94,000	†18,000	†1,060.6
Florida	27,643	6,438	437.9
Idaho	31,099	2,982	615.0
Illinois	96,326	11,473	†963.1
Indiana	76,246	39,857	3,435.1
Iowa	104,082	2,585	630.2
Kansas	128,552	1,101	271.0
Kentucky	68,704	15,436	602.0
Louisiana	39,803	2,771	766.0
Maine	21,483	2,953	340.7
Maryland	14,772	3,663	172.4
Massachusetts	18,868	6,575	294.1
Michigan	77,283	17,186	3,570.0
Minnesota	107,103	16,904	2,077.9
Mississippi	53,085	5,744	613.3
Missouri	111,520	7,880	488.7
Montana	64,732	1,772	139.3
Nebraska	86,556	496	160.0
Nevada	26,057	168	21.4
New Hampshire	13,841	1,691	145.5
New Jersey	14,061	6,505	819.3
New Mexico	45,549	1,802	296.6
New York	81,878	18,566	1,643.5
North Carolina	68,204	16,755	2,115.0
North Dakota	106,523	709	143.5
Ohio	84,219	36,067	1,206.0
Oklahoma	134,263	2,461	197.0
Oregon	45,475	8,050	978.5
Pennsylvania	90,991	13,921	943.0
Rhode Island	2,274	753	87.0
South Carolina	61,850	6,908	648.3
South Dakota	115,485	548	226.5
Tennessee	62,546	8,878	720.1
Texas	167,686	14,883	2,180.0
Utah	23,047	2,544	443.9
Vermont	14,677	3,545	148.5
Virginia	59,080	7,260	555.0
Washington	45,816	12,061	819.6
West Virginia	35,173	1,367	191.3
Wisconsin	78,679	19,714	1,968.1
Wyoming	46,528	440	139.3
Total	2,941,274	‡387,464	$6,360.1

*Figures are the latest available for classification of surfaced highways by States.
†Data approximate.
‡Over 400,000 on January 1, 1924.

PROMOTING FOREIGN PETROLEUM BUSINESS

(Continued from Page 150)

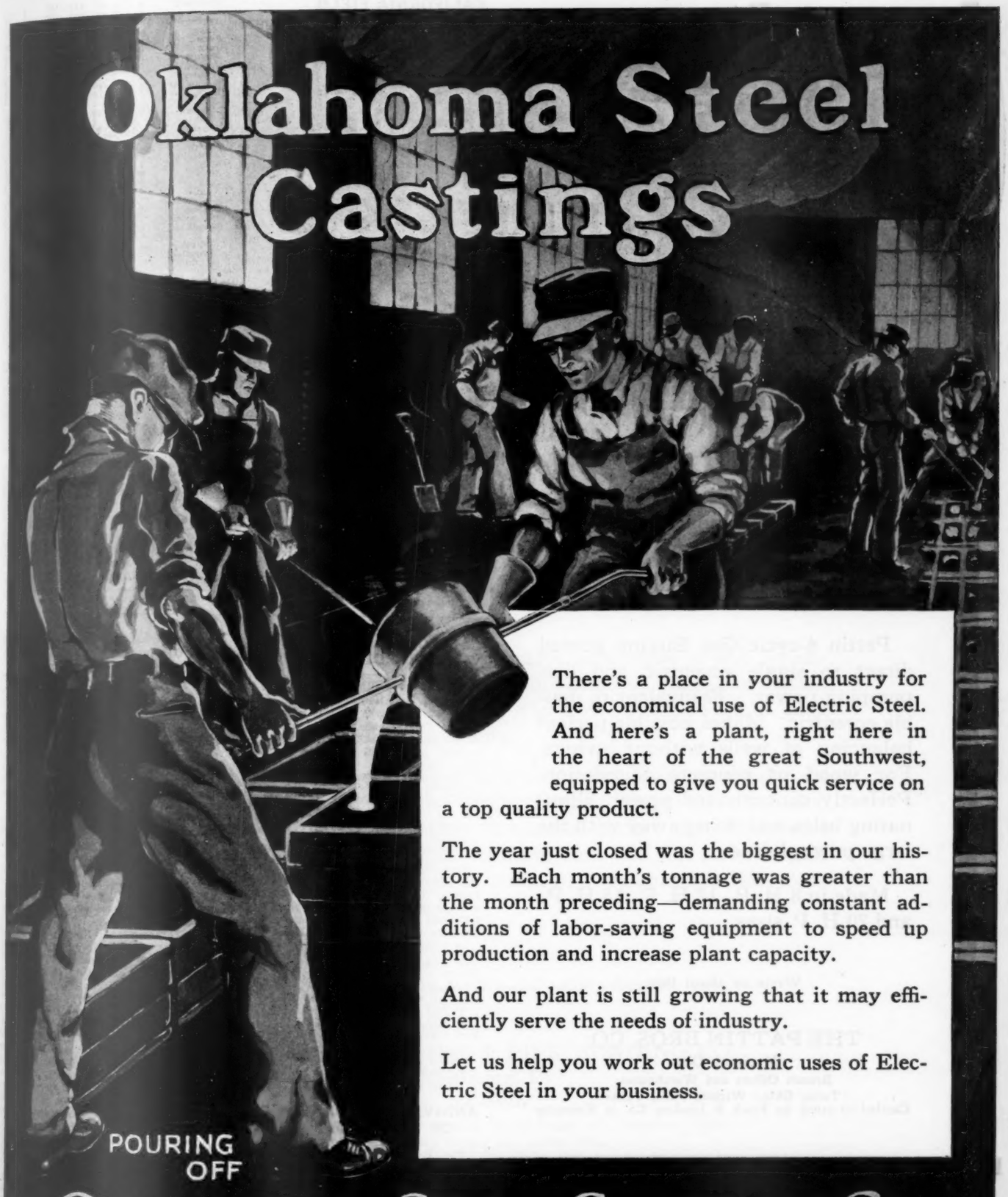
sion has begun the preparation of a series of commodity surveys covering the market for gasoline, kerosene, lubricating oils, and other individual petroleum products throughout the principal countries of the world. It is intended to carry this series along with the general country surveys, thus making a comprehensive survey of the foreign market for petroleum products from the standpoint of the general petroleum market in each country and also from the standpoint of each separate product. Efforts are also being made to improve the facilities for distributing to interested companies such information as is received from abroad but which cannot be published in "Commerce Reports" or special circulars, due to the lack of space. Much of the material received is of interest to a few companies but not of sufficient general importance to be published for general distribution. Arrangements have been made by means of a list of loan material to provide for current notices of such material to be sent out periodically so that individual companies may request the loan of such report as are not published but which might be of interest to them.

Further improvement of the distribution of circulars and trade opportunity information is also being made, with a view toward making available to each exporter all possible information that would be of value and still to give distribution only to interested firms. The special statistical service of the division is being constantly improved for this service. Special attention is also being given to the revision and expansion of trade lists in cooperation with the Commercial Intelligence Division. An increasing number of requests for foreign petroleum prices have been received by the division, as a result of which a periodical price information service has been inaugurated. One feature of this service is a quarterly report on gasoline prices in all principal foreign markets. It is intended to increase this service as may be required by the industry.

ASK GASOLINE TAX SHARE

OKLAHOMA CITY, Okla., Jan. 24.—That 25 per cent of the tax on gasoline should be expended on township roads was demanded in the resolutions adopted by the Oklahoma Farmers Cooperative & Educational Union. The resolutions asked also that 25 per cent of automobile license fees be used on rural route and motor truck roads, and be collected by the county treasurer.

Oklahoma Steel Castings



There's a place in your industry for the economical use of Electric Steel. And here's a plant, right here in the heart of the great Southwest, equipped to give you quick service on a top quality product.

The year just closed was the biggest in our history. Each month's tonnage was greater than the month preceding—demanding constant additions of labor-saving equipment to speed up production and increase plant capacity.

And our plant is still growing that it may efficiently serve the needs of industry.

Let us help you work out economic uses of Electric Steel in your business.

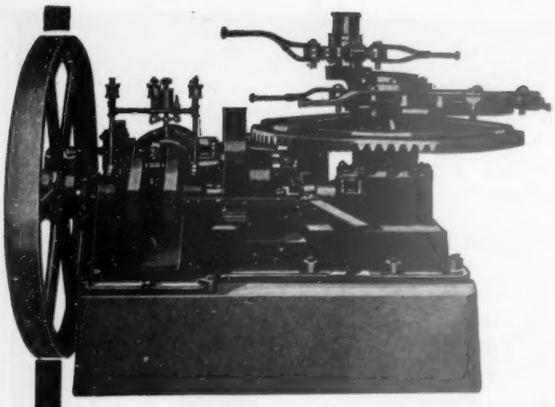
POURING OFF

OKLAHOMA STEEL CASTINGS CO.

MAKERS OF

OKLAHOMA ELECTRIC STEEL

TULSA, OKLA.



Learn for Yourself About This Power

If you need compact, strong dependable power, you owe it to yourself to investigate this latest Pattin combination.

Pattin 4-cycle Gas Engine geared direct to single eccentric and disc pumping power. Equivalent to double eccentric. Makes possible perfect balancing of wells without swings. For wood or concrete foundation. Perfectly concentrated power, eliminating belts, and doing away with the large power house.

Made in 8 H. P., 12 H. P., 15 H. P., and 20 H. P. sizes.

Write us about this.

THE PATTIN BROS. CO.
Marietta, Ohio
Branch Offices and Warehouses:
Tulsa, Okla.; Wichita Falls, Texas
Carried in stock by Frick & Lindsay Co. in Kentucky

PATTIN POWER

CALIFORNIA FIELD STATISTICS FOR 1924

(Continued from Page 200)

September	4	1,018	91	38	...	10
October	14	5,887	92	49	1	15
November	12	4,038	96	60	...	15
December	8	1,668	104	64	1	17
Total 1922—	74	26,203			9	199
January	15	3,502	98	70	1	13
February	8	3,291	98	71	3	10
March	13	4,868	97	80	1	16
April	8	1,996	106	90	...	16
May	17	4,503	108	105	5	22
June	10	3,581	110	116	...	14
July	14	5,760	106	124	2	13
August	13	5,736	103	136	3	9
September	11	7,433	103	141	3	15
October	16	12,548	86	155	1	10
November	15	13,558	90	157	1	26
December	6	5,996	93	163	...	19
Total 1923—	146	74,771			18	183
January	9	11,085	105	159	...	21
February	5	12,777	102	161	2	18
March	5	6,497	104	163	2	18
April	10	15,976	106	159	2	18
May	5	6,083	113	159	1	11
June	11	10,346	122	168	3	7
July	23	18,938	96	209	1	11
August	7	6,197	96	213	3	9
September	9	3,289	91	214	...	8
October	18	4,246	79	223	5	4
November	9	2,468	66	233	7	2
December	18	2,410	43	245	5	1
Total 1924—	120	98,313			37	90
January	11	1,189	40	273	1	6
February	3	338	35	267	3	1
March	2	1,198	33	271	3	4
April	2	107	28	275	3	1
May	7	1,312	26	274	4	1
June	2	230	30	271	...	1
July	3	739	25	287	5	1
August	6	930	22	295	3	1
September	5	842	17	299	3	1
October	5	333	19	299	3	1
November	6	2,887	16	298	7	1
December	1	380	17	298	4	1
Total	55	10,262			53	21
Total to date	397	210,169			93	553

TANKER SHIPMENTS FROM LOS ANGELES HARBOR 1923-1924, Inclusive

	Intercoastal			Exports		
	Crude, Fuel and Tops	All Refined Oils	Total Barrels Intercoastal	Crude, Fuel and Tops	All Refined Oils	Total Barrels Exported
1922—						
January	1,500,000	.....	1,500,000	600,000	150,000	750,000
February	2,800,000	.....	2,800,000	375,000	85,000	460,000
March	3,800,000	175,000	3,975,000	1,050,000	70,000	1,075,000
April	5,500,000	175,000	5,675,000	375,000	360,000	735,000
May	6,200,000	200,000	6,400,000	850,000	75,000	925,000
June	5,900,000	350,000	6,250,000	950,000	125,000	1,075,000
July	6,500,000	125,000	6,625,000	1,100,000	125,000	1,225,000
August	5,700,000	75,000	5,775,000	975,000	90,000	1,065,000
September	6,500,000	250,000	6,750,000	750,000	125,000	875,000
October	5,600,000	.....	5,600,000	825,000	100,000	925,000
November	5,150,000	750,000	5,900,000	550,000	125,000	675,000
December	5,800,000	450,000	6,250,000	600,000	300,000	900,000
Total	60,950,000	2,550,000	63,500,000	8,950,000	1,730,000	10,680,000
1924—						
January	5,350,000	450,000	5,800,000	850,000	350,000	1,200,000
February	4,000,000	165,000	4,165,000	950,000	350,000	1,300,000
March	4,150,000	300,000	4,450,000	1,000,000	550,000	1,550,000
April	3,600,000	250,000	3,850,000	750,000	650,000	1,400,000
May	3,500,000	300,000	3,800,000	1,250,000	500,000	1,750,000
June	3,150,000	150,000	3,300,000	900,000	450,000	1,350,000
July	3,500,000	75,000	3,575,000	1,700,000	700,000	2,400,000
August	3,600,000	225,000	3,825,000	1,200,000	750,000	1,950,000
September	3,250,000	150,000	3,400,000	1,500,000	725,000	2,225,000
October	3,000,000	85,000	3,085,000	1,400,000	450,000	1,850,000
November	2,000,000	165,000	2,165,000	1,250,000	600,000	1,850,000
December	1,900,000	250,000	2,150,000	950,000	375,000	1,325,000
Total	41,000,000	2,565,000	43,565,000	13,700,000	6,450,000	20,150,000
Grand total	101,950,000	5,115,000	107,065,000	22,650,000	8,180,000	30,830,000

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended January 17 totaled 425,000 bbls., a daily average of 60,714 bbls., against 905,000 bbls., a daily average of 129,286 bbls. for the week ended January 10.

At Atlantic Coast Ports—	
Baltimore	75,000
Boston	70,000
New York	280,000
Total	425,000
Daily average	60,714
Total Atlantic and Gulf Coast ports	425,000
Daily average	60,714

Imports of crude and refined oils at the principal ports for the week ended January 17 totaled 1,348,000 bbls., a daily average of 192,571 bbls., compared with 1,750,000 bbls., a daily average of 250,000 bbls. for the week ended January 10.

At Atlantic Coast Ports—	
Boston	165,000
New York	527,000
Others	55,000
Total	747,000
Daily average	106,714
At Gulf Coast Ports—	
Galveston district	320,000
New Orleans and Baton Rouge	251,000
Port Arthur and Sabine district	30,000
Total	601,000
Daily average	85,857
At All U. S. Ports—	
Total	1,348,000
Daily average	192,571

ANNIVERSARY BANQUET OF SALESMEN'S SCHOOL

The Butler Manufacturing Co. celebrated with a banquet at the Kansas City Club the completion of its twelfth annual salesmen's school. Twenty-four years ago there were only three men and this year there were 63 persons, representing the officers and directors, the sales force and factory department heads, backed by an organization of nearly half a thousand employes. The main office and factory are in Kansas City; another office and factory are in Minneapolis, Minn., and other offices and dealer-representation in nearly all parts of the country. The evening's program was in the hands of President Charles R. Butler, the instrumental music rendered by the orchestra, headed by C. C. Crouch, vice president and manager of the Minneapolis factory.

The roll of former office boys was called by Mr. Butler and it was shown the majority of the officers had risen from the ranks. Mr. Butler called for the stockholders to rise and nearly everyone present stood. According to the report given by Mr. Butler, the business for the past two months has shown an increase over the corresponding months last year and the prospects were extremely promising.

The Butler Manufacturing Co. was organized in 1901 for the purpose of manufacturing steel tanks. In 1902 the company moved to larger quarters. By 1912 another move to larger space was the result. Now the company has a big, modern, daylight plant in Kansas City and another branch factory in Minneapolis.

The officers are: Charles R. Butler, president; E. E. Norquist, vice president and plant manager; Harry F. Smothers, vice president; Roy S. Kemp, vice president and credit manager; William A. Knapp, secretary, secretary; Oscar D. Nelson, treasurer; Don J. Butler sales manager; William C. Heimlich, advertising manager; F. A. Rufi, assistant vice president and plant manager; Victor Norquist, assistant plant manager; John G. Fahlstrom, superintendent. Minneapolis officers: C. C. Crouch, vice president and manager; John Nelson, superintendent, E. L. Snyder, assistant superintendent.

CARBON PLAN IN AMARILLO

AMARILLO, Tex., Jan. 24.—Oil operators and business men of Amarillo have perfected a temporary organization to petition the Texas Legislature to amend the law relating to the use of natural gas for the manufacture of carbon black so that more of the gas of the Amarillo district may be utilized. Only a small percentage of the Amarillo district gas is used by a smelter and Amarillo and for domestic consumption. Harry M. Brown, general manager of the Amarillo Gas Co. says his company would not object to a limited number of carbon black plants.

Down—and Back!

With everything in your favor *profitable production* is still an uncertainty. Naturally, the more precautions you take—the better your chances are for a paying well—so make doubly sure of your couplings by specifying Harrisburg.

In Harrisburgs you get a coupling of forged seamless steel—no weld—no weakness. Double strength steel that prevents leaks, cracks and distortion. A perfect thread and perfect taper that mean easy stabbing and long life—a coupling that will not strip or gall under the roughest make-up or break-out. A coupling that goes down to pay sand—and back!

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In addition to the stock jar illustrated above, which fits any of the standard spouts on the market, we are supplying a number of manufacturers with lettered dispensing jars in special designs.

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Our seamless Oil Bottles of clear flint glass have rendered valuable sales assistance to the oil industry for many years. They are available in 2 oz., 4 oz., and 8 oz. sizes with ground and polished bottoms when specified.

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21,894 COMPLETIONS, RECORD OF 1924

(Continued from Page 84)

Southwest Texas Fields 446 wells were finished with 213,460 bbls. of first-day production. Their combined results were 1,408 completions and 451,610 bbls. initial production. The record of the previous year, when both fields were carried under one classification was 1,609 completed wells and 428,945 bbls. of first-day production.

Big things were expected of the Rocky Mountain region in 1924, but they failed to materialize. The discovery of oil in Moffat County, Colorado, was believed to herald the coming of a big field, but subsequent dry holes and the presence of water in the wells completed as oil wells gave Moffat County a black eye. On the eastern side of the range in the Fort Collins area the year passed without the expected big field being opened up, although that territory is not yet to be condemned.

Aside from an occasional big crevice well in the Kevin-Sunburst Field in Montana and a stray big well outside that field, Montana did not give any more promise of big oil production than it did last February when the whole State was reveiwed by The Oil and Gas Journal and the facts as to its possibilities set forth. The average initial production of the oil wells in the State increased from 91 bbls. in 1922. to 266.7 bbls. last year.

Oil was discovered on a new structure in the Roswell district in the southeastern part of New Mexico, but it was not followed up by a vigorous development. The northwestern fields, in the Navajo Nation, did not develop much in the way of new production in the course of the year, but the 11 oil wells completed averaged 209.7 bbls. per well in first-day production.

Wyoming completed 664 wells last year as against 451 the year before, but showed a decrease in initial production and in average initial production per well. Last year's crop of oil wells averaged 188.1 bbls. when they came in while those of 1923 averaged 338 bbls. at the start. A deep pay sand in the Salt Creek Field promises large results in the future.

The eastern fields of New York, Pennsylvania, West Virginia, Ohio, Indiana, Illinois, had to be content with routine work. The low market price of oil discouraged much development east of the Mississippi River. Even Kentucky fell below its mark of the year 1923 but operators in that State are anxious to resume development work and are awaiting a higher market for crude to make it worth the hazard.

WORLD'S LIQUID FUEL ASSETS SUMMARIZED

(Continued from Page 197)

Punjab Field has not yet shown sign of large development.

Virgin Oil Areas

Peru, the Argentine, Venezuela and Colombia are practically virgin oil areas, and their future importance as oil producers, while difficult to estimate at this stage, is bound to be great and may be surprisingly so.

Trinidad wells yield a useful if not large output as outputs are reckoned today, and it seems likely that it may be maintained for a long time.

Egypt has proved disappointing from an oil producing standpoint, but the possibilities of discovering new oil fields in Egypt are not yet exhausted.

Canada's production of oil is remarkably small, considering the high productivity of United States areas at no great distance from the frontier. There is much reason to think that Canada has more than one great oil field, particularly in the Northwest, which so far has been little tested. Climatic conditions and long distances from the markets are likely to delay developments of any oil pools that may exist in the northern parts of Canada.

Mesopotamia is believed to be at least as petroliferous as Persia, but is largely an unknown region. But all who know the country and are qualified to speak about oil prospects express themselves optimistically in regard to Mesopotamian oil.

There remains vast tracts of the world in which no definite results as to the presence of large quantities of petroleum have been recorded. That oil exists in large quantities in Australia is the opinion of most geologists who are acquainted with the continent. South Africa is less promising, but western Africa is practically certain to be found to contain large oil fields.

Only second in importance to the petroleum resources of the world are those of oil shale. Few countries of the world are entirely without this useful potential oil asset, but only a few of the more important and actually proved deposits can be noticed.

Immense Shale Supplies

The United States enjoys the same prominence in regard to oil shale that it does in petroleum resources; 1,900 square miles of oil shale lands are known in Colorado, capable of yielding at least 20,000,000,000 bbls. of crude oil and 300,000,000 tons of ammonium sulphate. In Utah there is a still larger area of shale land and some of the shale exceeds in richness that of California. The estimated quantity of potential oil in these shales is 42,800,000,000 bbls. and ammonia equivalent to about 500 tons of ammonium sulphate. Smaller but still large oil shale tracts are known in Nevada, southwest Montana and the Rocky Mountain region, and bituminous shales are known to underlie some of the eastern coal fields in Indiana, Ohio, Tennessee, New York, Pennsylvania, Maryland, West Virginia and Kentucky.

Rich oil shales occur in New Brunswick; shale deposits are known in British Columbia, the northwest territories of Canada, while the shale deposits of Nova Scotia have received much attention. One area in the latter province has been estimated to contain 500,000,000 tons of shale of commercial quality. Promising oil shale deposits are reported to exist in Saskatchewan, and there are oil shale deposits in Quebec. Large oil shale deposits are found in Newfoundland, the West Coast area covering 150 square miles.

Oil shales of considerable value occur in Brazil, and there are deposits in Chile and Uruguay.

Scotland still contains considerable quantities of oil shale, and the Ballycastle Field in the north of Ireland is a large one, containing about 190,000,000 tons.

The Esthonian shales have been the subject of a number of reports, all of which bear testimony as to their large extent and large oil potentialities. Other European resources of oil shale of importance are in Bulgaria, Italy, Spain, France, Germany and Great Britain.

Whatever Australia's prospects may be in regard to petroleum there is no doubt about her oil shale deposits. The New South Wales deposits have yielded oil for a good number of years and are of high average richness. Queensland and Tasmania both contain large oil shale deposits of excellent grade, and there is also oil shale in New Zealand. Doubtless other shales will be discovered in Australasia.

In the Far East there is also oil shale. Recently rich and extensive deposits have been found in the Amherst district of Burma, and these deposits extend into the neighboring Siamese territory. China is believed to contain a number of oil shale deposits, and at Funshun in Manchuria oil shale deposits estimated at 1,300,000,000 tons are said to be undergoing development by the Japanese.

Other Liquid Fuels

The oil potentialities existing in the coal fields of the world have been much discussed. Besides coal there is lignite and other low grades of coal and peat, all of which have the potentiality of supplying oil in vast quantities.

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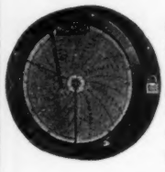

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For recording depth or volume of oil in storage tanks, etc. Made in indicating as well as recording type.

Indicating Thermometer
Ranges from — 25° to + 1,000° Fht.

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tropical jjungles, where a riot of vegetation contains practically nothing of an economic character, can gauge the possibilities of growing crops for alcohol production on these areas. While alcohol seems likely to be the most important liquid fuel with a vegetable source, there are those who think that vegetable oils, like castor and ground-nut oil, could be produced in sufficient quantity to provide enormous quantities of liquid fuel.

Not only are the world's resources of liquid fuel, or liquid fuel potentialities, practically inexhaustible, but recent progress in mehcanical development is tending to produce engines not only taking a wide range of fuels but giving far greater duty per unit of fuel consumed than at present. One looks for improvements in internal engines utilizing the Diesel principle, which will revolutionize the liquid fuel requirements of the world and enable mankind to obtain double, or it may be treble or quadruple, the power now derived from each barrel of crude oil.

This survey of the world's liquid fuel resources, necessarily very brief, is sufficient to show that the world's oil fuel supplies are secure for a period which it would be folly to attempt to limit. At the same time there is no reason why this evidence of abundance should be made the excuse to justify wasteful uses of liquid fuel.

Geologist Suggests Trend System With Anticlinal Theory

By P. H. Lund

Ever since Dr. I. C. White, State geologist of West Virginia, the "Daddy of Oil Geology," advanced the anticlinal structure theory in connection with the discovery and location of oil pools, admittedly correct so far as it goes, that system has been, and is now, employed by nearly all the leading petroleum geologists.

However, as many hundreds of wells, located and drilled on structures containing ideal anticlines, are nothing but dry holes, it proves conclusively there is something besides structures—something besides anticlines, to be taken into consideration when making locations.

Having been engaged in petroleum geology, almost since the discovery of oil in quantity in the Mid-Continent and Western oil fields, the writer early accepted the anticlinal theory and diligently employed that system in working out oil structures and in making locations. While that system brought success to a certain degree, about equal to the average geologist possessing an equal amount of practical experience and training, it was not entirely satisfactory from a strictly professional standpoint.

There was something lacking with the anticlinal theory. There was something yet to be considered in petroleum geology which would bring that science nearer the 100 per cent success goal. In other words, there was a secret in petroleum geology yet to be discovered, for it is well known that, with the exception of wells lost through mechanical accidents, there are invariably geological reasons why some oil wells are dry and others are producers, although they may be located but a short distance apart.

With this in view the writer determined, if possible, to discover that secret, if, indeed, there were such. At the expenditure of thousands of dollars and the traveling of many hundreds of miles and the consumption of several years of time, the work was pursued.

Nearly every oil field in the United States, and many in foreign countries, were visited. Every dry well within possible reach was visited and the structure surrounding it was carefully examined and, when obtainable, the logs were carefully and painstakingly scrutinized. Thousands of acres of structure, particularly in the Gulf Coast and Mid-Continent areas and in localities on the eastern flank of the Rocky Mountain uplift, extending from the Gulf of Mexico to the Canadian boundary line, were carefully gone over, and a record of all that work is kept on file in the office for the benefit and free use of clients.

The conclusion arrived at, which can absolutely and without a question of doubt be proven, is that petroleum, in commercial quantities, exists only in structures traversed by "trends." These trends are well defined and easily recognized when once thoroughly understood by the practical geologist.

It was proved by unmistakable geological evidence that every oil field visited was located on an oil trend, and that every dry hole examined was located off the oil trend, although many such dry holes were drilled on excellent anticlinal structures and some were drilled directly in oil fields and, in many instances, close to producing wells.

Then the discovery of this geological secret, which is greatly assisting the writer in the successful locating of oil wells, was found to be no secret at all—it is plain A B C, for it is as traceable on the earth's surface, by the trained geologist, as are the various structures in which oil is found. In fact, the trend system is much more readily recognized for it is rarely ever hidden by overburdens, erosional disintegrations or surface contortions caused by the folding and buckling of the earth's crust during its many geological changes.

The writer does not claim this is an absolutely infallible system to employ in geologizing a prospective oil bearing locality, nor that all wells located on the trend system will become commercial producers, but what is claimed, which the writer is in a position to prove, is, that by employing the trend system, in conjunction with the anticlinal system, the result in obtaining commercial production is over 90 per cent successful, whereas the employment of the anticlinal structure theory alone, without considering the trend system, is only about 25 per cent successful. It is the anticlinal theory accepted with the trend system added.

GASOLINE OUTPUT IN MONROE GAS FIELD

Recent advances by Standard Oil Co. of Louisiana and other refiners are of considerable benefit to Colombian Carbon Co. Colombian Carbon is producing from its own properties, located in various States, in excess of 100,000,000 feet of natural gas a day, largely from fields in Monroe Parish, Louisiana. In addition, the company purchases about 50,000,000 feet of gas a day. Present output of natural gas gasoline is about 40,000 gallons daily, which can be increased to 60,000 gallons daily when market conditions warrant. The company's output of carbon black in 1923 was 62,000,000 pounds. In addition, 7,000,000 pounds of lampblack and 12,000,000 gallons of gasoline were produced. These figures were equaled or exceeded in 1924.

Columbian Carbon's oil and gas properties consist of 47,908 acres of proven and 63,082 acres unproven lands in Louisiana, West Virginia, Wyoming and Oklahoma, with gathering pipe lines aggregating 989,059 linear feet. The company also owns a 100-mile pipe line from the Monroe, La., gas field to Alexandria, La.

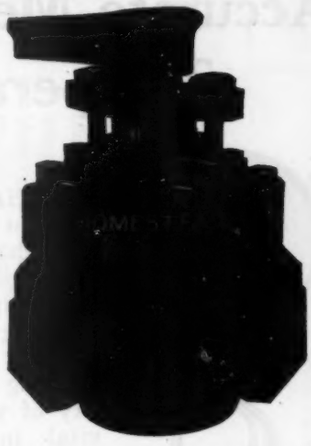
ARKANSAS GAS CONTRACT

LITTLE ROCK, Ark., Jan. 24.—G. T. Cazort of Lamar, Ark., has contracted the entire production of 21 gas wells owned by him in the vicinity of Alma, Ark., to the W. R. Martin interests of Fort Smith. The contract is for five years and calls for all gas that may be produced by other wells drilled by Cazort.

GALVESTON GAS OFFICERS

GALVESTON, Tex., Jan. 24.—Fred M. Lege, Jr., has been reelected president of the Galveston Gas Co. P. E. Nichols was reelected vice president and general manager, L. P. Leith secretary-treasurer and W. P. Hughes assistant secretary-treasurer. The three principal officials and Ballinger Mills and Sealy Hutchings constitute the board of directors.

Wax Presses



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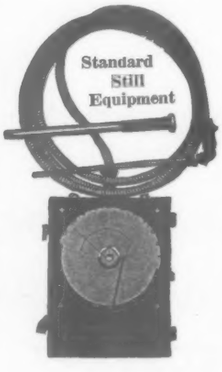

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SUMMARY OF CALIFORNIA OPERATIONS FOR DEC., 1924

(Continued from Page 81)

Santa Maria	1	6	..	.....	201	1	..	
Summerland	..	..	..	.....	135	..	..	
Ventura-Newhall	1	32	4	1,301	566	1	..	
Los Angeles-Salt Lake	..	..	..	.....	396	..	21	
Whittier	..	10	..	.....	178	..	..	
Fullerton	..	1	..	.....	389	..	..	
Coyote	..	1	..	.....	231	..	..	
Santa Fe Springs	..	5	..	.....	354	2	4	
Montebello	..	4	4	883	160	..	..	
Richfield	1	12	1	78	177	..	..	
Huntington Beach	2	17	1	260	398	..	..	
Long Beach	..	26	3	944	525	2	3	
Torrance	13	21	20	3,264	610	4	1	
Domingues	7	27	10	32,078	38	1	3	
Rosecrans	21	51	4	2,577	17	1	..	
Inglewood	..	5	1	200	2	..	..	
Miscellaneous drilling	6	101	..	.....	...	2	..	
December	73	432	72	46,800	11,319	18	35	
November	63	434	62	33,130	11,258	30	40	
Increase	10	*2	10	13,670	61	*12	*5	
Average for Year 1923	111	759	82	114,690	8,928		24	
Average for year 1922	115	605	67	43,700	9,410		17	
Average for year 1921	90	536	57	15,631	9,425		14	
Average for year 1920	77	403	49	14,125	9,299		13	
Average for year 1919	58	340	47	9,572	8,774		18	

*Decrease.

Review of the Year 1924

Supplementing the regular monthly report, the following yearly figures are presented:

Total stocks in all Pacific Coast territory, as of January 1, 1924, were 116,727,442 barrels; as of December 31, 1924 they were 125,021,964 barrels, an increase of 8,294,522 barrels during the year.

Production for the year totaled 230,063,117 barrels, a decrease of 33,665,778 barrels under 1923 production. A comparison of the 1923 and 1924 production of Santa Fe Springs, Huntington Beach and Long Beach Fields is interesting. In 1923 these three fields produced 182,947,278 barrels, which was 69.4 per cent of the total production of the State, while in 1924 they produced 104,055,177 barrels, which was 45.2 per cent of the total production in the State. The total daily average production for December, 1923, was 706,427 barrels. It declined to 606,294 barrels in December 1924, notwithstanding that about 85,000 barrels of settled production shut in in 1923 was opened up during 1924, 587 wells were abandoned during the year; of these 251 were abandoned producers and 336 abandoned drillers.

Below is shown the total production for the year and the daily average, also the well completions and initial daily output for the year, for each oil field in the State:

District—	Barrels Per Year	Daily Average	Wells Completed	Daily Initial Output
Kern River	6,773,321	18,506	10	230
McKittrick	2,094,598	5,722	2	60
Midway-Sunset	37,464,839	102,363	191	81,336
Elk Hills	13,589,611	37,130	84	19,537
Lost Hills-Belridge	1,526,371	4,170	..	.....
Coalinga	10,144,428	27,717	14	372
Wheeler Ridge	342,357	935	7	1,284
Watsonville	20,979	57	..	.....
Santa Maria	2,857,495	7,807	..	.....
Summerland	53,201	145	..	.....
Ventura-Newhall	4,020,169	10,984	21	6,675
Los Angeles-Salt Lake	907,453	2,479	..	.....
Whittier	761,211	2,080	..	.....
Fullerton	4,120,789	11,259	2	339
Coyote	5,683,559	15,529	3	2,175
Santa Fe Springs	26,399,655	72,130	75	21,562
Montebello	6,230,299	17,023	7	1,335
Richfield	4,457,679	12,179	7	1,864
Huntington Beach	17,533,520	47,906	55	10,262
Long Beach	60,122,002	164,268	195	114,969
Torrance	17,526,123	47,886	531	169,199
Domingues	6,811,531	18,611	41	87,674
Rosecrans	611,432	1,671	21	17,230
Inglewood	10,445	29	2	265
Total	230,063,117	628,588	1,238	568,944

TWO-DAY CONVENTION OF SALESMEN HELD

The Guarantee Liquid Measure Co. of Rochester, Pa., has just closed its third annual sales convention. The sales force from all over the country, numbering close to a hundred, was convened at Rochester for an interesting two-day session. The Guarantee Co. now claims to be the world's largest producers of 5 and 10-gallon gasoline pumps.

The Fry Sales convention opened with a plant inspection at Rochester. This was followed by a lunch at the Welcome Club, at which Walter F. Zimmer, president of Zimmer-Keller, Inc., handling the Guarantee Liquid Measure Co.'s advertising, was toastmaster. This luncheon concluded with the awarding of prizes to the honor salesmen of the Guarantee Liquid Measure Co.

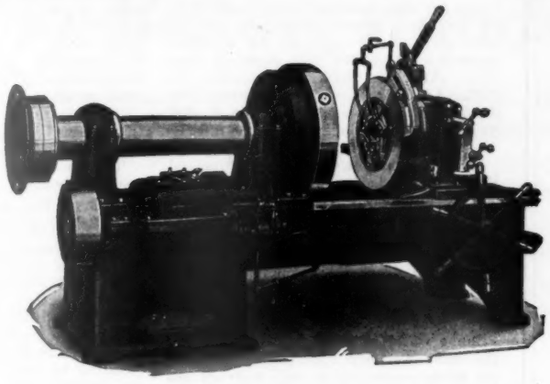
F. W. Fischer, vice president of the Guarantee Liquid Measure Co., took charge of the business meeting. Fred Hall of Des Moines, Iowa, spoke on "New Accounts;" E. R. Mowbray, Denver, Colo., "Use of Post Cards;" Fred Hall, Des Moines, Iowa, "Capitalizing on Our Magazine and Trade Paper Advertisments;" J. C. Schoo, Jr., Cleveland, Ohio, "Letters to Back up Personal Visits;" S. C. Klien, New Orleans, La., "Mounted Leaflets;" Guy Livingston, Washington, D. C., "Selling the Product that We Make;" E. W. Bartram, Boston, Mass., "Distribution of Leaflets;" F. S. Shumaker, Omaha, Neb., "Making Friends With the Fire Marshals and Sealers;" G. W. Nicholson, Chicago, Ill., "Hitting All the High Spots and Some Not so High;" William P. Butler, general sales manager, "What Do You Know?"

The following day, the business session was held in the William Penn Hotel, Pittsburgh, Pa., with William P. Butler, general sales manager, in the chair. This meeting consisted of talks by J. C. Schoo, Jr., Cleveland, Ohio, "Hand vs. Power;" E. W. Mowbray, Denver, Colo., "Eye Measurement;" George Wall, Los Angeles, Cal., "Off-Colored Gas;" J. Mulholand, St. Louis, Mo., "Freak Installations;" G. K. McNutt, Little Rock, Ark., "Appearance;" A. W. Bowser, Oklahoma City, Okla., "Valves on Nozzles;" J. B. Cleveland, Atlanta, Ga., "Installation Costs and Maintenance;" W. H. Parker, Rochester, Pa., "Adjustable Overflow;" A. Blackstone, Rochester, Pa., "Installations;" W. P. Butler, general sales manager, "Orders;" J. K. Ambrose, secretary-treasurer, "Credits."

At a novel luncheon W. S. Townsend, president of the Guarantee Liquid Measure Co., made an inspirational commercial speech.

AD VALOREM OIL TAX

OKLAHOMA CITY, Jan. 24.—The ad valorem tax on oil in storage in Oklahoma will be based on the price as of January 1, it was decided by the State Board of Equalization. Oil in storage more than three days and less than a year will be assessed at the full market price. That in storage more than a year will be assessed at 25 per cent less than the market price and in case it has been held more han four years the reduction will be increased to 40 per cent, it said.



SOMETHING NEW

No. 4 Peerless Machine with Landis die-head

We offer a complete line of pipe threading machines of the single pulley drive, all speed changes being obtained through steel gears in a compact gearbox. These machines can be supplied with the Landis Stationary die-heads, or with the Peerless adjustable die-heads, or both heads can be arranged to fit the same cross rail on the die stand.

Send in your inquiries

BIGNALL & KEELER MACHINE WORKS,
of the N. O. Nelson Mfg. Co.
Edwardsville, Illinois

Imperial Refining Company
Kettle Creek Refining Company
Imperial Oil Marketing Company

Manufacturers and distributors of High Grade petroleum and its products.

64/66-375 endpoint gasoline
60/62-400 endpoint gasoline
58/60-437 endpoint gasoline
56/58-450 endpoint gasoline
48/50-450 endpoint naphtha
42/44 gravity, water white kerosene
36/38 stove distillate
32/36 gas oil
20/24 gravity fuel oil
50/60% asphaltum road oil
Petroleum Coke, screened and pile run

General Offices
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Refineries
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America's Most Progressive Rope Company

is well known Wherever Oil Is

The method of merchandising AJAX ROPE COMPANY'S PRODUCTS is unique and individual.

Our organization is HUMAN and those who distribute our cordage are BOOSTERS for this company.

We have some OPEN TERRITORY—you owe it to yourself to investigate what we have to offer.

Our DISTRIBUTION is carried on EXCLUSIVELY through recognized OIL WELL SUPPLY COMPANIES.

A complete stock is carried in TULSA under direction of our FIELD REPRESENTATIVE

CHAS. H. MOORE

R. S. O. Lawson, President

Please tell us about your sales proposition.

Name.....

City.....

State.....

MEXICO'S NEW RECORD OF WELLS COMPLETED

(Continued From Page 90)

ing in the hole. Just to the southeast of it. the company stopped operations in the early part of the year at La Culebra. Altogether it drilled five wells in this place, three of which were finished in 1923. All of them were water wells. The above covers the northern territory and its wildcat operations the past year.

Going West

Swinging southwest of the Marland Field in the hacienda Limon, south of Ebano, Marland interests drilled a test at Guerrero (No. 1 Rubio), just north of the Tamuin River. The drill stopped in shales at 2,862 feet, no showing. Running north from there the same interests drilled just south of the railroad track at Rodrigues Station (San Luis division of the National Lines), getting sulphur water at 2,172 feet. These were the most westerly operations conducted for many years, being well west of the Vera Cruz boundary in the State of San Luis Potosi.

South of Topila, Cortez Oil Corp. finished two more deep dry holes in Lagartero, making its third failure in this place. South of that, in Los Cues, La Corona Petroleum Co. junked a test in the San Felipe at 3,000 feet; but it looked like the desert of Sahara when the tools were lost.

South Field's Wildcats

There was little wildcatting during the year in the South Field. Agwi companies drilling under an agreement with Mexican Oil Co. in its federal zone concession in the Laguna de Tamiahua, completed two failures one test going as deep at 3,629 feet, without encountering the Tamasopa, and the other one drilling into salt water at 2,504 feet. International Petroleum Co. drilled a salt water well in Santa Rosalia, south of the Tuxpam River and east of Alamo, getting the water at 3,206 feet. La Corona Petroleum Co., finally gave up a deep test in Comales, west of Tepetate. Cortez Oil Corp. completed another failure in its extensive Aguada; and has another one still in travail, too deep for hope, as the year ended. The above about sums actual wildcatting in the south fields during the past year. There was some feeling about here and there in old producing sectors by contractors for small wells on high spots with minor results as to production; and some of the companies did the same. Huasteca Petroleum Co. did not do much drilling during the year and what it did was confined largely to its established Cerro Azul and Tierra Blanca Pools, although it did go back into its old Tres Hermanos, but completed nothing during the year. It is continuing to drill there and also has a wildcat test going down in Granadilla still further north.

North of Furbero Mexican Eagle Oil Co., is now drilling a wildcat at Mecapepec. South of the Tuxpam River, and well southwest from Alamo, a test is being put down at Metlaltoyuca. At Santa Amalia, also south of the Tuxpam River, but east of Alamo, International is now drilling a test. Agwi companies are going back into Laguna de Tamiahua to drill another one. In sum, wildcat operations actually underway in the south fields at this time number five tests. To this figure can be added two more in the Aguada and two in Tres Hermanos, both places having already had several tests finished heretofore with negligible results.

North Field's Activity.

In the more northern districts, actual wildcat operations can be summed as follows: The most interesting is International Petroleum Co.'s No. 1 El Naranjo, northwest of Ebano and west of the Tancasneque, already reviewed. It is in the San Felipe formation at less than 2,000 feet and has had gas and oil shows. Mexican Gulf Oil Co.'s work at Los Esteros has already been reviewed—i.e., one deep test trying to fish out diamond drill tubing and one test drilling at a fair depth with a showing. The latter might prove something. Just north of Tampico at Laguna de la Puerto Modelo Vincent is drilling, but the drill is not deep enough to be interesting. At Cahuayotes, south of Topila and southeast of the before mentioned failures in Lagartero, Cortez Oil Corp., has shut down a test at over 3,000 feet in the San Felipe. It looks a failure. South of here, in Los Cues, La Corona Petroleum Co. hopefully drills another deep test being nearly 3,000 feet now, which would spell failure ordinarily.

The efforts at Corcovado and Tortuga in juxtaposition to producing areas, have already been noted.

The above sums all actual wildcatting now underway in the northern district.

The Year at Hand

As the year advances there will undoubtedly be some more actual bona fide wildcatting done. There must be. But there isn't any set program for it apparently. The undrilled locations in proven territory in the northern fields will receive steady consideration; and just now the small operator shows a disposition to look around in the old proven districts and try and locate among the salt water wells and the strippers and the dry holes a little place that might prove to be a "high spot," and give him a small well. Apparently the major companies owning these old leases rather encourage him in it. To begin with a small operator can hardly get out in strictly virgin territory owing to the cost of such an operation. It is enormous when you consider the transportation of material and supplies, the question of fuel, and very often that of water.

As for the larger companies, the real active ones who have production and acreage in defined areas are evidently going to drill that up, or at least drill as near to production as they can, before going far afield. Other companies are sitting tight and doing almost nothing, waiting, apparently, to see someone else start something.

North Mexico

In the northern part of the States of Tamaulipas and of Neuvo Leon there is considerable acreage blocked up by some of the larger Tampico companies, but apparently it is not going to be touched soon. The test near Linares, already reviewed, was a setback. In Tampico one seldom hears this extreme northern country mentioned. It is possible that southwest Texas interests, operating from Texas, will be the first to cross the Rio Grande and commence operations in this north country as undoubtedly operators north of the river have acreage also. Tampico is too far away, however, for those operations to come under its eye, unless, indeed, someone should get something near acreage held by some of the operating interests located here, but—that will be in the future and another story.

PETROLEUM PRODUCTION IN MEXICO 1924

(Subject to Revision in Final Review)

	Light	Heavy	Total
January	3,028,572	9,062,271	12,090,843
February ...	3,412,639	8,883,529	12,296,168
March	3,974,359	9,822,444	13,796,803
April	2,807,689	9,925,206	12,732,895
May	3,606,798	9,053,828	12,660,626
June	3,195,475	7,788,983	10,984,458
July	3,905,998	7,593,101	11,499,099
August	3,097,302	7,670,367	10,767,669
September ..	2,626,089	6,910,998	9,537,087
October	3,789,256	6,899,700	10,688,956
November ..	3,555,314	7,234,826	10,790,142
*December .	3,797,300	7,427,400	11,224,700
Total 1924...	40,796,791	98,272,655	139,069,446
Total 1923...	63,426,959	88,342,889	151,769,848
	21,630,168	9,929,766	12,700,402

*Estimated.

GEOLOGIST HONORED

Dr. C. E. Decker, associate professor of geology and paleontology at the University of Oklahoma, has recently been elected a fellow of the Geological Society of America.

CZECHO-SLOVAKIAN OUTPUT

The production of petroleum in Czecho-Slovakia for the past five years has been as follows: 1919, 7,126 tons or 47,939 bbls.; 1920, 10,110 tons or 68,013 bbls.; 1921, 14,065 tons or 94,619 bbls.; 1922, 18,298 tons or 123,096 bbls.; 1923, 11,000 tons or 74,000 bbls.

Republic Belting stands the gaff!

For drilling—gang powers or beam pumping—Republic belting produces like a tested field. Careful experiment caused Republic Engineers to adopt the present construction of Republic drilling and pumping belts—time and service tests proved to users their superiority. One driller says, "I operate several strings of tools and have used different kinds of belting, costing more, but which did not last any longer than good old Republic."

Republic Belting stands the gaff! Why not investigate?

THE REPUBLIC RUBBER COMPANY
Youngstown, Ohio

REPUBLIC BELTING

WRIGHT HOIST

Built for Oil Well Service

Strong and sturdy with an exceptionally large factor of safety to give you unfailing, dependable, every-day service under the most severe usage.

You will never realize the great difference in hoists until you have tested the superior qualities of Wright Hoists.

They are built better.
Let us send you all the facts.

Write for our catalog.

WRIGHT MANUFACTURING COMPANY MANSFIELD, OHIO

REAL FIRE INSURANCE FOR THE OIL INDUSTRY

The Oil Insurance Association is in its sixth year of successful operation, with 100% performance record testifying to the dependability, thrift and speedy and complete satisfaction of its service.

There are 70 first class, representative stock fire insurance companies including underwriters comprising the association.

OIL INSURANCE ASSOCIATION MEMBER COMPANIES

Aetna Insurance Co., Hartford, Conn.
American Insurance Co., Newark, N. J.
American Alliance Ins. Co., New York, N. Y.
American Central Ins. Co., St. Louis, Mo.
American Eagle Fire Ins. Co., New York, N. Y.
Alliance Insurance Co., Philadelphia, Pa.
Automobile Ins. Co., Hartford, Conn.
Ben Franklin Underwriters, Pittsburgh, Pa.
Boston Insurance Co., Boston, Mass.
California Ins. Co., San Francisco, Cal.
Camden Fire Ins. Ass'n., Camden, N. J.
Central States Fire Ins. Co., Wichita, Kans.
Citizens Insurance Co., St. Louis, Mo.
Columbia Ins. Co. of Jersey City, N. J.
Commercial Union Assurance, London, Eng.
Commonwealth Ins. Co. of New York, N. Y.
Connecticut Fire Ins. Co., Hartford, Conn.
Continental Insurance Co., New York, N. Y.
Fidelity Phoenix Fire Ins. Co., New York, N. Y.
Fire & Marine Underw't's, Hartford, Conn.
Firemens Fund Ins. Co., San Francisco, Cal.
Firemens Insurance Co., Newark, N. J.
Firemens Underwriters, Newark, N. J.
Franklin Insurance Co., Philadelphia, Pa.
Glens Falls Insurance Co., Glens Falls, N. Y.
Girard Fire & Marine Ins. Co., Phila., Pa.
Girard Underwriters, Philadelphia, Pa.
Great American Ins. Co., New York, N. Y.
Hanover Fire Ins. Co., New York, N. Y.
Hartford Fire Ins. Co., Hartford, Conn.
Home Fire & Mar. Ins. Co., San Francisco, Cal.
Home Insurance Co., New York, N. Y.
Hudson Insurance Co., New York, N. Y.
Imperial Assurance Co., New York, N. Y.
Insurance Co. of North America, Phila., Pa.
Insurance Co. of State of Pennsylvania, Philadelphia, Pa.
Jersey Fire Underwriters, Newark, N. J.
Liverpool & London & Globe Ins. Co., Liverpool, England
Mechanics Insurance Co., Philadelphia, Pa.
Mechanics Underwriters, Philadelphia, Pa.
Mercantile Insurance Co., New York, N. Y.
National Ben Franklin Fire Ins. Co., Pittsburgh, Pa.
National Fire Ins. Co., Hartford, Conn.
Natl. Security Fire Ins. Co., Omaha, Neb.
New Hampshire Fire Ins. Co., Manchester, N. H.
New York Underwriters Agency, New York, N. Y.
Niagara Fire Ins. Co., New York, N. Y.
North British & Mercantile Ins. Co., London, England
Norwich Union Fire Ins. Soc., Norwich, Eng.
Palatine Insurance Co., London, England
Patriotic Insurance Co. of America, New York, N. Y.
Pennsylvania Fire Ins. Co., Philadelphia, Pa.
Phila. Fire & Marine Ins. Co., Phila., Pa.
Phoenix Assurance Co., London, England
Phoenix Insurance Co., Hartford, Conn.
Providence Washington Ins. Co., Providence, R. I.
Queen Insurance Co., New York, N. Y.
Reliance Insurance Co., Philadelphia, Pa.
Rochester Dept. Gt. American, New York, N. Y.
Royal Exch. Assurance Co., London, Eng.
Royal Ins. Co., Ltd., of Liverpool, England
Scottish Union & Nat. Ins. Co., Edinburg, Scotland
Security Ins. Co., New Haven, Conn.
Springfield Fire & Marine Ins. Co., Springfield, Mass.
St. Paul Fire & Marine Ins. Co., St. Paul, Minn.
Sun Insurance Office, London, England
Sven Fire & Life Ins. Co., Gothenburg Sweden
Union Assurance Society, London, England
Union Ins. Soc. of Canton, Hong Kong, China
World Fire & Marine Ins. Co., Hartford, Conn.

Complete details of the Oil Insurance Association may be obtained from your insurance agent or broker.

Among the purposes for which the Oil Insurance Association were organized are:

To enable oil operators to secure sufficient dependable insurance to adequately protect their interests;

To furnish property holders and those controlling oil businesses expert engineering and inspection service, so methods of insuring this class may be standardized, and efficient fire protective devices installed and properly maintained, thereby stabilizing the business to the point which will enable insurance companies generally to accept the class at fair cost and under equitable policy rates;

To make available the most business-like insurance arrangement for all oil companies.

OIL INSURANCE ASSOCIATION
H. M. Carmichael, Manager
209 W. Jackson Blvd. Chicago, Ill.

"THE OIL INDUSTRY'S ANSWER" WAS "THE OIL INDUSTRY'S AWAKENING"

By L. M. Fanning

"The Oil Industry's Answer," published early last year by The Oil and Gas Journal, might be as appropriately referred to as "The Oil Industry's Awakening." That the public was uninformed as to many of the simplest facts pertaining to oil and that the industry as a result was misunderstood and regarded with unwarranted suspicion, that this condition was being capitalized by the agitator and the demagog and was fraught with the most serious consequences to the industry, was generally recognized by oil men, but it remained for "The Oil Industry's Answer" to awaken the industry to the possibilities of effective presentation of facts not only of educational advantage to the public but to the industry itself. This stands out as one of the most significant developments of a broad nature affecting the petroleum industry in 1924.

When the Board of Directors of the American Petroleum Institute at its Fort Worth meeting last December formally created a public relations committee which is authorized to assemble the facts of the petroleum industry and to distribute such facts to the industry and to the public and to raise $100,000 per annum over a period of three years for such work. The Oil and Gas Journal in an editorial pointed out: "The movement to have the oil industry put its case before the public, which had its inception in these columns 18 months ago, has borne fruit."

In a review of the year 1924, devoted to the industry's relations to the public, a survey of what "The Oil Industry's Answer," accomplished—how it was used—is worth repeating. The writer stated in The Oil and Gas Journal issue of May 22:

Telling Its Story

"For the first time in its history, the petroleum industry is telling its story to the public. There is no evidence that at any other time in the course of the industry's development has the industry as a whole or otherwise made any constructive effort to inform the public of the facts vitally concerning it. Even now the industry as a unit is not functioning concertedly, but so much progress has been made in the adjustment of industry and company policy to a realization of the need of publicity with resultant actual steps taken in many cases, that, looking at it broadly, the conclusion that the public is now being told the story of oil is justified. But this does not mean in any sense that the whole job has been done.

"While the necessity for informing the public was generally realized throughout the industry and in certain isolated instances efforts had been made to meet this need, it is now possible to state that the mind of the industry needed some direct dynamite to really crystallize the movement. This was supplied by 'The Oil Industry's Answer.' With this material available for immediate use and with its adaptability for use in the many direct and indirect ways that must be adopted to accomplish the purpose in view, the industry is seizing the opportunity it affords and is actually doing something.

"The use to which 'The Oil Industry's Answer' is being put comprehends every phase of the educational field * * * Companies are distributing this book to all within their organizations who come in contact with the consuming and outside public. Salesmen, agents, tank truck drivers and filling station attendants are receiving copies with instructions, and in some cases definite orders, that they read the material and pass along the information. One company has distributed the book among its training classes as a part of their course of study. Through sales manager and dealers the book is placed in the hands of motorists, local customers, local public officials and local editors.

"Material in 'The Oil Industry's Answer,' including text, graphs and charts, has been provided by oil companies as news matter to newspapers and is appearing in papers in small and large cities in many parts of the country. In addition many oil companies are incorporating the material in their advertising, some of which has already appeared and is now appearing and some of which is mapped out for insertion during the balance of the year.

"Supplied to libraries, educational institutions and public officials, the book is a new medium of information concerning oil, being utilized by speakers, instructors, students and law makers. Under the circumstances it is not an exaggeration to ascribe to The Oil and Gas Journal's contribution the crystalization of the industry's movement to inform the public."

Organizing a Program

The movement for an organized program of public relations for the oil industry gained impetus following the activities of The Oil and Gas Journal. The Western Petroleum Refiners Association, Mid-Continent Oil and Gas Association and Association of Natural Gasoline Manufacturers, among others, became active and insistent in interesting the American Petroleum Institute in taking up the work. At the request of these associations, which were joined by other national associations including the American Oil Men's Association, National Petroleum Marketers Association, Association of Independent Oil Producers, National Petroleum Association and Chamber of Mines and Oil, a general conference of the industry was held in Atlantic City in June to meet with the board of directors of the American Petroleum Institute.

As a result of this meeting a unanimous agreement was reached favorable to the principle of a public relations program. A committee of the conference comprising representatives of the associations and of the institute board was appointed and instructed to draw up definite recommendations to be presented to the whole board. A special subcommittee of the general committee was apopinted comprising Edward Prizer, chairman, of the Vacuum Oil Co.; E. C. Lufkin, chairman of The Texas Co.; J. A. Moffett, Jr., vice president of the Standard Oil Co. (New Jersey), and T. W. Yocum, publicity director of the American Petroleum Institute.

The general committee held several conferences at which they heard men identified with similar work in other industries and based largely upon the views obtained, the subcommittee drew up a program which was adopted by the general committee and the board of directors of the institute at the Fort Worth meeting in December. This action called for the creation of a Public Relations Committee similar to the general educational committee already functioning which will be entrusted with passing on the work to be done, as well as raising the $100,000 annually designated by the board.

Public Relations Committee

A meeting of the Public Relations Committee was held in Atlantic City on January 12 this year and it was organized as follows: W. N. Davis, chairman, president Mid-Continent Oil and Gas Association; J. Howard Pew, vice chairman, president Sun Oil Co.; Paul Shoup, president Pacific Oil Co.; C. C. Herndon, Skelly Oil Co.; Edward Prizer, chairman Vacuum Oil Co.; J. A. Moffett, Jr., vice president Standard Oil Co. (New Jersey); E. C. Lufkin, chairman The Texas Co.; representing national associations are L. V. Nicholas, president National Petroleum Marketers Association; H. H. Smith, secretary Mid-Continent Oil and Gas Association; D. E. Buchanan, president Association of Natural Gasoline Manufacturers; W. H. Gray, president National Association of Independent Oil Producers; H. G. James, secretary American Oil Men's Association; O. P. Keeney, president National Petroleum Association; F. A.

AMDYCO

Approved by Underwriters' Laboratories, Inc., and Inspection Department of the Associated Factory Mutual Fire Insurance Companies.

The Foam Blanket!

The foam blanket is the only effectual extinguisher for oil tank and similar fires. Two characteristics are apparent when Amdyco, the new foam stabilizer, is present. They are an increased persistency and a greater volume of expansion.

Use Amdyco. It is readily adapted to any type of foam system.

Amdyco may be had in either liquid or crystals. Also in complete charges for hand or portable equipment.

AMERICAN DYEWOOD COMPANY

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HOFFER OIL CORPORATION

PETROLEUM PRODUCERS

GENERAL OFFICES
W. T. Waggoner Building
FORT WORTH, - - - TEXAS

Two Fishing Jobs Completed in 45 Minutes!

At 1 o'clock in the morning Jim Chamberlain, drilling 3 miles northwest of Jenks, lost a 6⅝" cutter in a 1900-ft. hole. The next day he rigged up a home-made fishing tool. It broke off and was also left in the hole.

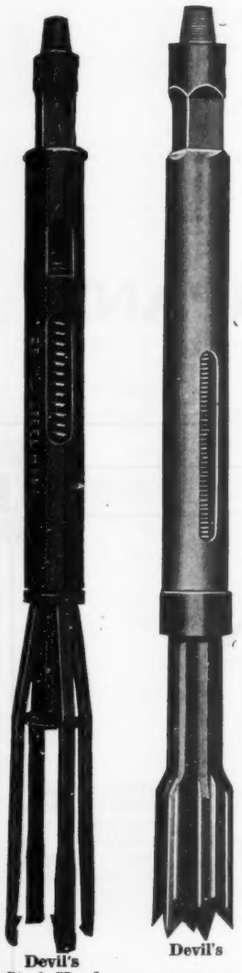
Jim had seen the DEVIL'S STEEL HAND at the Exposition, and was so impressed with it that he rushed to our Tulsa store and rented one.

He got back to the lease at 12 o'clock. At 12:45 Mr. Neal of our Tulsa office drove up to view the result. The men were just finishing their job. On the first run they had recovered the fishing tool and on the second the cutter!

Two fishing jobs completed in 45 minutes! That makes Jim a *double-barreled* member of the Success-in-One-Run Fishing Club.

Honestly, can you imagine what a man is missing who fails to put these tools to work at the first sign of a fishing job of this class?

Write today for details and prices.



Devil's Steel Hand — Devil's Pitchfork

BROWN WELDING & MACHINE CO.

Breckenridge, Texas

Tulsa Rental & Sales Branch, 424 East Second St., Tulsa

120

DEVIL'S STEEL HAND and PITCHFORK

Pielsticker, president Western Petroleum Refiners Association, and A. C. McLaughlin, president Chamber of Mines and Oil, California.

The following subcommittee, which will do much of the direct handling of the work has just been named as follows: W. N. Davis, Chairman; J. Howard Pew, vice chairman; Edward Prizer, H. H. Smith, C. C. Herndon and R. L. Welch, general secretary and counsel of the American Petroleum Institute, ex officio.

The work will get under way as soon as possible, the first step being to create an organization. The directors of the institute in approving a public relations program urged each unit in the industry to cooperate with the committee in the raising of the necessary funds and in the conduct of the work by participating in the distribution and dissemination of the material which the committee may prepare and suggest. The staff of the American Petroleum Institute will render assistance and it was suggested that the boards of directors of all other oil trade organizations instruct their executive officers to do likewise. Authority was also given for the enlargement of facilities of the statistical division of the institute to the extent found necessary to enable it to supply the Public Relations Committee with the data necessary in its work.

As at present outlined the new public relations organization will prepare information for the press, issue pamphlets which will be made available to units of the industry for distribution as these units see fit, and will also prepare advertising of a good-will nature and make these similarly available. The institute will not, however, engage in direct advertising, it is believed.

The thought is that the functions will be in large part that of providing material for the use of companies, rather than undertaking direct distribution which would involve funds in excess of the amount appropriated. Material will also be made available for speakers. Public talks and the use of the radio will be encouraged.

Attacks During the Year

A review of the industry's public relations during the past year would be incomplete without reference to some of the outstanding occurrences that marked its relationship with the public during the year. The oil industry was subject to attack from practically every direction. It was threatened with hostile legislation under the sponsorship of Senator La Follette throughout the early term of Congress. Many States conducted investigations into gasoline prices. The Federal Trade Commission and the Department of Justice was ordered by the President in February, in response to a wire from Governor McMaster of South Dakota to the effect that interests allied with the Standard Oil Co. had cornered the oil supply, to make an investigation. The Federal Trade Commission reported to the President in June and the report without being made public was turned over to the Department of Justice.

The investigation into naval oil leases which stirred the whole country reacted severely against the petroleum industry in the public mind. There were oil planks in all the political platforms, and presidential candidates, particularly Senator La Follette, devoted considerable attention to the subject.

While it is questionable whether political expediency was involved, nevertheless, the filing of a civil action by the Federal Attorney General against some of the leading oil companies charging violation of the anti-trust law in the matter of cracking patents, had its bearing upon the state of the public mind as regards the petroleum industry.

However, as pointed out in The Oil and Gas Journal's editorial, despite the most concerted campaign of radicalism ever attempted in this country, in which hostility to the oil industry was featured on every occasion, enough of the public had been reached by the facts about the oil business to contribute materially to the defeat of the more notorious of the candidates.

"Nevertheless, the battle is but begun, Lesser officials and politicians in the various States may still be expected to use the oil business as a target. Fortunately, the moment is opportune to carry forward the work of setting the industry's case before the public. The people are in a receptive mood. They have shown their distrust of demagogy. They are willing to hear the other side."

REMICK WILL MANAGE NEW HYDROTATOR CO.

The Hydrotator Co., a newly formed corporation, has acquired the patents and engineering business of L. C. Trent, who has been operating as the L. C. Trent Engineering Co. in Philadelphia. Mr. Trent has retired from the business except for a limited territorial arrangement on the Pacific Coast.

Neither the Hydrotator Co. nor its predecessors, the L. C. Trent Engineering Co., is in any way affiliated with the Trent Process Corp., the Trent Superfeed Co., or the Pittsburgh Trent Co.

Walter L. Remick, formerly engineering editor of the Keystone Mining Catalogs, will assume active management of the Hydrotator Co. after February 1. Mr. Remick is an engineer of varied experience, especially along research lines. Problems involving recovery or removal of solids and filtering, dissolving, precipitating, agitating, thickening, classification and separation; in general the treatment of any class of solids mixed with or in suspension in liquids will receive attention.

The general offices of the company are locaed at 1328 Chestnut Street, Philadelphia, Pa.

FRENCH IN CZECHO-SLOVAKIA

Somewhat confusing information reaches the London Petroleum Times respecting the formation of a company, said to be a French group, at Prague, with support from the Czecho-Slovakian Government. The company is to have a long lease, on advantageous terms of certain petroleum fields at Egbell, belonging to the State, with the rights to make searches in the Lower Carpathians; Gleby district is also mentioned. There is to be no monopoly, however, and the company must refine its crude on the spot, or at least in Czecho-Slovakian territory. The capital of the new company is put at 25,000,000 couronnes. Both French and Belgian interests are taking part in the concern and especially the Franco-Polonaise des Petroles. A supplementary message states that the French group has been approached by the Czecho-Slovakian Government with the object of obtaining the consent of the promoters to a transfer of the rights to an American "consortium."

HOPES FOR OIL IN ITALY

The investigations of the Compagnia Italiania Petroli, of Milan, a company capitalized at 1,200,000 lire, have taken them into all the producing districts of Italy as well as into other localities where tests have been made. The president of the company says tests have been drilled with no consideration for geology. His belief is that Italy, properly developed should be able to supply 50 per cent of the needs of the central European countries. "With regard to our findings, these lead us to believe there are sufficient deposits in Italy to justify an extensive campaign both of research and actual drilling. In various parts of this country we find much evidence of oil existing in abundance; not only have we seen many seepages on the surface, but there is also a very persistent flow from springs and marshes of natural gases in sufficient quality to burn freely when lighted," he said.

PUMPS FOR WORTHAM

The Humble Oil & Refining Co. has ordered nearly 100 pumping outfits for its new wells in the Wortham, Tex., Pool, believing that in common with Mexia and other pools, it will be necessary to uphold production on its leases.

The Cross Cracking Process

The cycle of the Cross Process, cracking Gas Oil, is eleven days, one day of which is for cleaning, which means that your cracking installation is producing gasoline over 90% of the time.

Compare this with other processes and think how it affects costs.

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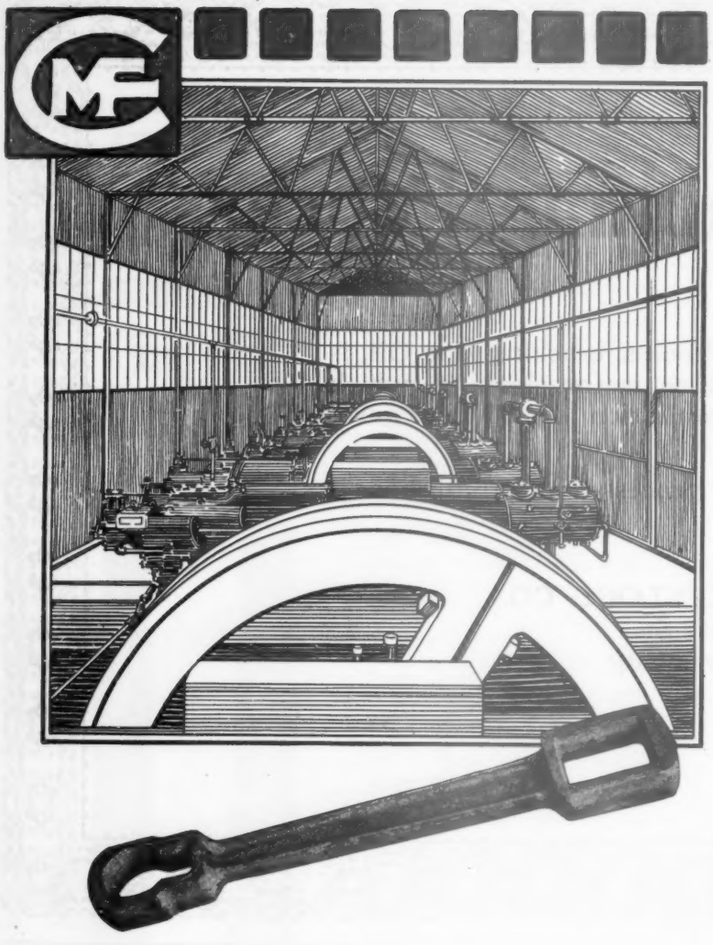

One by one leading manufacturers are using drop forged parts for the load bearing and strain resisting parts of their products. The tough give and take strength of forged steel offers no element of chance break downs, but affords reserve stamina for emergency loads and hard pulls.

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Detroit Office—705 Ford Bldg.

CHAMPION DROP FORGINGS

NEW POOLS NORTH CENTRAL TEXAS 1924

(Continued From Page 73)

1,150 bbls. Of this amount about 950 bbls. is coming from Carson County, and less than 200 bbls. from Hutchinson County. Most of the development so far has been on the vast ranch of the Burnett estate.

Until late in the past year operators in the Panhandle were somewhat handicapped because of the lack of a market for their oil. There were no pipe lines into the field, but during the past year a 6-inch line was laid from the field to Amarillo and a 4-inch line from the field to loading rack facilities at the town of Panhandle.

It is a generally conceded fact that operations in the Panhandle are tedious and occasionally hazardous. After the lime is reached at about 2,200 feet there is almost a continual battle with hard drilling and exceedingly heavy gas pressures. These cause delays that are not encountered in other fields and due to the fact that the Panhandle is a comparatively new district it has retarded development there to no little extent.

However, it maw be said that there is only one factor that is holding back the development of the Panhandle Field and that is the lack of demand for crude. When the demand comes and the price is posted, operators will overcome the other obstacles of the field.

Of the wildcat districts the Marathon Fold and the Panhandle right now offer the most interesting possibilities. It is natural to expect that their development will be sow until such time as the demand for crude will justify more intensive drilling.

NORTH CENTRAL TEXAS

Completions by Districts

District—	Comp.	Initial Prod.	Dry	Gas
Wichita County	674	32.316	253	0
Archer County	1,243	130.239	389	0
Stephens County	188	21,312	55	13
Young County	110	1.560	79	2
Eastland	194	5.649	68	16
Reagan	16	13.958	6	0
Wilbarger	42	11.843	12	2
Mitchell	22	1.600	1	0
Carson	13	1,050	3	4
Callahan	40	3,854	23	2
Brown	40	370	15	4
Shackelford	20	1,855	7	0
Throckmorton	17	22	12	0
Palo Pinto	48	608	21	7
Clay	46	297	26	14
Hutchinson	7	337	1	2
Montague	12	140	9	2
Baylor	13	64	10	0
Comanche	4	70	2	0
Coleman	7	17	5	0
Scurry	2	48	0	0
Wheeler	4	0	1	2
Potter	3	0	0	3
Reeves	7	0	7	0
Hardeman	3	0	3	0
Grayson	2	0	2	0
Erath	3	0	3	0
Crockett	4	0	4	0
Ward	3	0	3	0
Childress	2	0	2	0
Foard	2	0	2	0
Collin	2	0	2	0
Taylor	2	0	2	0
Haskell	2	0	2	0
Concho	2	0	2	0
Armstrong	1	0	1	0
Dallon	1	0	1	0
Runnells	1	0	1	0
Wise	1	0	1	0
Gray	1	0	1	0
Sleicher	1	0	1	0
Howard	1	0	1	0
Glasscock	1	0	1	0
Denton	1	0	1	0
Knox	1	0	1	0
Terrell	1	0	1	0
Pecos	1	0	1	0
King	1	0	1	0
Hansford	1	0	1	0
Moore	1	0	1	0
Total 1924	2.814	227.209	1.047	75
Total 1923	2.666	185,826	861	81
Difference	148	41,383	188	6

Completions by Months

Months—	Comp.	Initial Prod.	Dry	Gas
January	165	11.693	64	4
February	176	13.652	77	7
March	211	15.684	80	3
April	233	20.296	101	8
May	290	27.023	106	3
June	239	21.907	110	8
July	313	15.210	122	8
August	206	14.377	94	5
September	137	11.475	42	10
October	216	13.790	85	6
November	205	22.584	82	9
December	223	30.518	84	4
Total 1924	2.814	227,209	1.047	75

CARBONDALE IN CALIFORNIA

The Carbondale Machine Co., of Carbondale, Pa., has issued an attractive booklet entitled, "Carbondale in California." It illustrates the use of the company's refrigerating apparatus in that State. A 6-page folder has also been prepared on the Carbondale Spiro-Flo Condenser, illustrating its advantages over other types. These advantages it is said include simplicity of design, a patented expansion joint, the riveted tube sheet joint, hammer welded shell, economy of first cost, and ease of cleaning and repairing in operation.

CONSERVATION BOARD CREATION IS EPOCHAL

(Continued From Page 124)

most steadily been suffering from overproduction.

That some steps could be taken to regulate such a condition has been a growing sentiment, not only in Governmental circles where interest lies mainly on the side of conservation of a resource for future use and emergency, but within the industry. Involved in the question are the laws under which petroleum producing operations are carried on; how far the petroleum industry itself could go toward voluntary curtailment; the matter of industry cooperation and the anti-trust law; whether or not a change of laws would bring about the desired effect; whether Government supervision or regulation by a special oil board would be desirable; whether, after all, the law of supply and demand should not be permitted to work out the solution and not be interfered with; whether any method of cooperation with the Government and continued free operation of the industry could be worked out.

Any of these suggested solutions, except that against interference with the free play of the law of supply and demand, involves probable fundamental change in the operation of the industry. Such change may not be sudden and it may be in greater or lesser degree, but that is why the creation of a Federal Oil Conservation Board, under instructions such as those issued by President Coolidge, is referred to as promising epochal changes for the industry.

Conservation Problems

Is the industry to enter a new era which will be one of Government control? Will a permanent Federal Oil Board regulate it? Will there be special legislation respecting petroleum development? Will Government and industry work out a cooperative program which will permit the latter to function without undue restriction? Will there be a modification of present laws which will clarify the industry's position as regards cooperation in recognition of the conditions peculiar only to it?

Whatever comes out of it, there is little doubt but that the industry has reached a phase in its development where Government and public relationships are going to have direct influence on its operations, possibly evolving into fundamental changes.

The few oil men who have expressed opinions on the possibilities presented by the appointment of the Federal Oil Board declare than an opportunity for constructive results is presented. Judge Amos L. Beaty, president of The Texas Co., believes the new board in cooperation with the oil industry will evolve some method whereby present waste would be largely eliminated.

Judge Beaty's View.

The principal fundamental problem is that of production which under our system of land ownership entitles the owner to all the oil he can get out of the land, despite the fact that oil drilled on one piece of land may be coming from the adjoining property belonging to some one else. Judge Beaty, while recognizing the complaints arising from this condition, points out that it is our system; it is our land law, and under it we have prospered and the United States has been made the leading power in the world so far as oil is concerned.

"I believe the fact of individual ownership, the fact that the proprietor of each tract of land is the owner of any petroleum underneath the surface with freedom to lease and develop it at his will, has been the chief contributing factor in the building up of this great industry of ours," he said in his address in December, before the American Petroleum Institute.

(Continued on Page 266)

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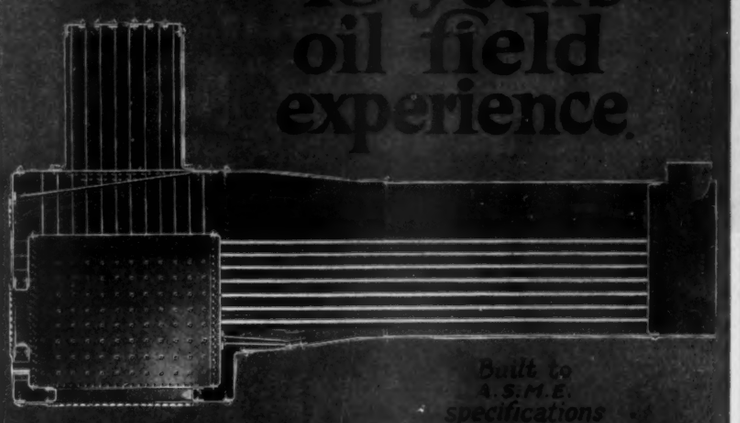

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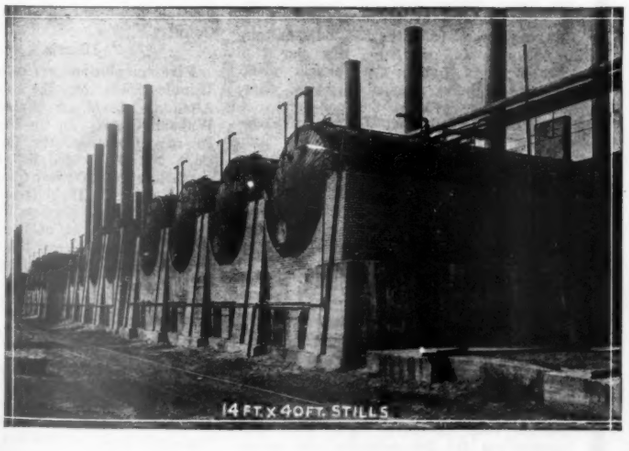

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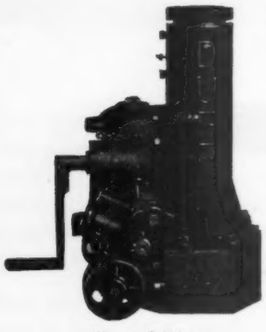

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Few Price Changes During Past Year in British Petroleum

The prices of petroleum products remained fairly stationary in Great Britain during 1924 says the London Petroleum Times. The chief variations were caused as a result of the zone areas being set up by the leading distributing companies, under which London and the Home Counties are favored in the matter of price in regard to motor spirit and kerosene. For the rest of England and Wales prices are in each case 1d. per gallon dearer; in Scotland prices are 2d. per gallon in advance of London and the Home Counties quotations, while in Ireland they are 3d. per gallon dearer. These differences in the case of Scotland and Ireland apply only to motor spirit, but for kerosene the quotations are respectively 1d. and 2d. per gallon dearer.

At the commencement of the past year the wholesale prices of motor spirit were 1s. 4d. (32 cents) per gallon, but they increased at the beginning of February to 1s. 8d. (40 cents), which price remained stationary until September. Then there was a drop of 3d. per gallon, bringing the wholesale price to 1s. 5d. (34 cents), while with the application of the zone arrangement which commenced at the end of September, London and Home Counties prices were reduced to 1s. 4d., at which price No. 1 motor spirit now stands.

In regard to kerosene, "Snowflake" and "White Rose" brands, the wholesale prices at the commencement of last year were 11d. (22 cents), per gallon, an increase of 1d. per gallon being made in February. This figure continued until November, when the price went back to 11d. per gallon, which quotation still stands.

Fuel oil prices have varied almost each month. Last January furnace fuel, ex-ocean installation, was 72s. 6d. per ton, or 10s. ($2.50), per ton cheaper than it is today. It rose to 77s. 6d. per ton in February, while in March and April another 5s. ($1.25) was added per ton each month, bringing the price at the middle of April to 87s. 6d. In August there was a reduction of 5s. per ton, and another 5s. came off at the end of September. Toward the end of November, there was a 5s. per ton increase, bringing the price, as at present, to 82s. 6d. per ton. Diesel fuel oil followed the various changes in furnace fuel. Last January Diesel fuel was 87s. 6d. per ton, ex-ocean installation, or 10s. per ton cheaper than today, the highest price of the year being reached in April, when quotations were 107s. 6d. per ton.

As for gas oil, last January it was 4½d. (9 cents) per gallon net and naked, ex-wharf, but quickly increased to 5½d. (11 cents), while in April it was 5¾d. It then declined in August to 5½d., and in October to 5¼d. per gallon, at which price it stood at the close of the year.

CENTRAL WEST

(Continued from Page 50)

was set with 2-inch tubing and the well was got under control. Cy Shoemaker took the rock pressure test with gauge which was attached to a leaky reducer, which in that condition recorded 400 pounds rock pressure. The well was opened up for 20 minutes and gauge showed 225 pounds pressure. Twenty-three minutes later the well gathered pressure which recorded 340 pounds. No volume gauge could be secured, but it is conservatively estimated above 2,000,000 feet. This well is about 2,000 feet southeast of the gas well recently found on the William Woods farm, which was fully as good but is being drilled deeper and at last reports was showing some oil. It is wells like these that encourage the average operator, for they realize that when oil is found, that natural gas is a mighty good thing to have for fuel purposes in pumping and drilling wells.

In Section 9, Benton Township, same county, D. M. Lipps got a dose of salt water at his test on the W. L. and E. A. Lentz 20 acres, being the south half of the northwest quarter of the northwest quarter of the section and nearly 1 mile north from the gas well on the Finan lease. This well has been put on the beam and is exhausting the brine to a great extent. This water could have been handled a great deal quicker and easier, had it not been for the premature explosion of a shot and the water came in while cleaning and putting the hole back into shape. The well looks as though it would be among the good producers of the Payne Field. Ledford & Robinson are about due to complete their No. 1 on the C. C. Springer, in the southeast quarter of Section 34, Harrison Township, same county and just at Payne's back door. The well is owned by John T. Schank of Chicago.

The Buckeye Pipe Line Co. has unloaded a 1,200-bbl. storage tank at Payne for the field, which will help take care of the production, which is shipped by tank cars from the loading rack just outside the town on the Nickel Plate Railroad. Some men of Payne are starting a well on the Charles Scitler farm, 2 miles east of Payne and between there and the hamlet of Worstville, near the Paulding-Harrison Township line, in Section 36, Harrison Township.

Central Ohio

Berry & Hout, drilling a wildcat well on the G. A. Hout farm, in Springfield Township, Richland County, in the Central Ohio Field, about 8 miles west of Mansfield, have struck a fair showing of oil in top of the lime at around 1,050 feet. The well has been given a shot, tubed and about ready to be put to pumping. It will make a small pumper, possibly 4 bbls a day. The oil is a very high gravity and a sample of same burned in a blow torch for five minutes. The same parties will shoot a similar showing on an adjoining farm drilled several months ago to the deep Clinton formation. They expect to start a third well at once and it is very possible a new lime oil pool has been discovered that may lead to larger producers.

In Monroe Township, Holmes County, the Klise-Eckstein-McCann Co. has drilled in a nice gas well at a test on the Saunders Martin, Lot 14. The well also makes a fair showing of oil. In the same township, the East Ohio Gas Co. brought in a light gas well at No. 3 C. M. Shank farm, Lot 10.

The Ohio Fuel Supply Co. is drilling a test on the Robert Crow No. 2 farm, Section 23, Sutton Township, Meigs County.

Illinois

Five completions are reported from the Illinois fields for the week, with the Allendale Field of Wabash Township, Wabash County, in the lead, with three. In this township, the Coon Creek Oil Co.'s No. 4, located 600 feet from the north line and 200 feet from the west line of the Alice R. Biehl farm, in the southwest quarter of Section 15, produced 40 bbls. from a depth of 1,485 feet. Hartman and others' test 175 feet from the south line and 450 feet from the east line of the Frank Smith farm, in the northeast quarter of Section 8, proved to be a dry hole at 1,620 feet. J. H. Whiteside and others' second test, 1,000 feet from the north line and 350 feet from the west line of the Howard Armstrong, Section 24, produced 15 bbls. at 1,515 feet.

In Casey Township, Clark County, the Gillette Oil Corp.'s test, 660 feet from the south line and 200 feet from the east line of the William Slater, in the southeast quarter of Section 25, after shot, showed a production of 25 bbls. from the stray sand at 1,437 feet. In Johnson Township, same county, Squires and others' No. 12, being 320 feet from the north line and 800 feet from the east line of the Charles Snearley, Section 34, pumped 5 bbls. from the shallow pay at 571 feet.

Indiana

Only one completions was reported from Indiana, a test drilled by Stensel and others, 660 feet from the south line and 1,120 feet from the west line of Ida B. Drake, in the southwest quarter of the southwest quarter of Section 21, which proved a duster at 908 feet.

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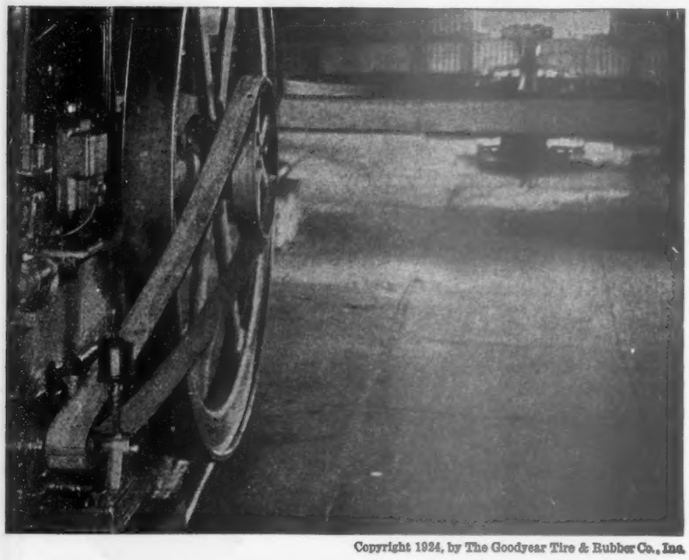

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GOODYEAR

GEOLOGISTS' PART IN OKLAHOMA OPERATIONS

(Continued from Page 192)

or about 66 2-3 per cent had been found by geologists in advance of drilling, and the greater part of the others, those not found by geologists, were drilled before oil geology was generally practiced.

I am listing a number of fields in Oklahoma, Kansas and Northern Texas, which I either personally know to have been located by geologists or which have been named to me by geologists of experience and reputation. At the same time I am indicating separately the fields in those States which were drilled early, before geology had come to its own. Also I give the list of fields which have been located without benefit of clergy during the past few years.

Finding of Fields

Oil and gas fields discovered before geology was practiced: Kansas: Altoona, Bolton, Buffalo, Coffeyville, Chautauqua, Cherryvale, Chanute, Fredonia, Humboldt, Independence, Iola, Mound Valley, Moran, Laharpe, New Albany, Neodesha, Oswatomie, Paola, Peru, Rantoul, Sedan, Wayside.

Oklahoma: Alluwe, Adair, Bartlesville, Bird Creek, Boston, Copan, Catoosa, Canary, Caney, Clagget, Cleveland, Childers, Chelsea, Coody's Bluff, Delaware, Delaware Extension, Dewey, Drumright, Flatrock, Gotebo, Granite, Glenn, Healdton, Lawton, Linepah, Morris, Muskogee, Wewoka, Wann.

Northern Texas: Corsicana, Electra, Iowa Park, Petrolia, Strawn.

Fields drilled on geological advice:

Kansas: Augusta, Bush-Denton, Buffalo, Beaumont, Coleman, Coffeyville, Dexter, Eldorado, Eastman, Elbing, Elk City, Florence, Fox-Bush, Graham, West Independence, Longton, Maple City, Madison, Padgett, Porter, Parsons, Peabody, Reese, Rock, Russel, Salyards, Thrall, Teter, Thompson, Urshel, Winfield.

Oklahoma: Braman, Brock, Burbank, Blackwell, Billings, Boynton, Barnes, Beland, Billingslea, E. Bristow, Cameron, Cruce, Comanche, Cement, Cromwell, Coalgate, Cedars, Chandler-Kelley, Country Club, Casey, Centrahoma, Deaner, Davenport, Denver, Deer Creek, Duncan, Dilworth, Depew, Dropright, Eaton, Fox, Francis, Garber, Hewitt, S. E. Healdton, Hominy, Hubbard, Ingals, Josey, Jennings, Kilgore, Keystone, Kinta, Lyons, Leonard, Loco, March, W. Muskogee, Morrison, Mervine, Mounds, Maramec, Mazie, Masham, Mannford, Newkirk, Norfolk, Osage-Hominy, Oscar, Ponca, Porter, Poteau, Perry, Phillipsville, Quinton, Red Oak, Robberson, Roxana, Ripley, Richard Hill, Red Bank, Schlagel, Shamrock, Spiro, Stroud, Stigler, Shaffer, Sholom Alechem, Stone Bluff, Tonkawa, Talala, Tuskegee, Turkey Mountain, Thomas, Terlton, Virgil, Vian, Velma, Wetumka, Westbrook, Vern Station, W. Wewoka, Walter, Wheeler, Wimer, Yale, Yeager.

Northern Texas: Amarillo, Bunger, Big Creek, Desdemona, Dalton, Gambrell, Hall-Hockaday, Harron City, Harned, Harmel-Griffin, Ibex, Ivan, Litchfield, Luling, Mexia, Mitchell Co., Moran, Parks, Powell, Panhandle, Peter-Kemp, Parish, Olney, Throckmorton, Sinclair-Moran, South Bend, Swastika, Wortham, Ragle, Ray-Stubblefield, S. Vernon.

Fields brought in "without benefit of clergy" in recent years:

Kansas: Carson, Oxford, Rainbow Bend.

Oklahoma: Chickasha, Papoose, Prairie, Sayre, Slick, Youngstown.

Northern Texas: Burkburnett, Benson, Herron-Hughes, Ranger.

Making a total in the three States of 226 oil and gas fields of which, according to the best judgment of the contributing geologists, 56 were drilled before geology was practiced, 157 were located by geologists in advance of drilling, and 13 have been brought in wildcat since geology has been in common use.

The approximate percentages run as follows:

Before geology was practiced, 24 per cent.

Drilled on geological advice, 70 per cent.

Drilled without geology, 6 per cent.

It goes without saying that in compiling these lists many fields have been omitted, some doubtless through ignorance, many with intention because of doubt. In the case of a few fields such as Blackwell, Chickasha, Burkburnett and Rainbow Bend, there is some slight difference of opinion.

Much to Learn

And what of the future? Has the geologist reached his period of greatest usefulness to the oil fraternity? Will his services from now on be sought more or will they be sought less? Has the geologist anything more to learn?

My judgment, based on several years of experience, is that the science of petroleum geology is today but in its infancy. The signs of the times indicate that each year the oil geologist will be of more and more use to the oil man.

To my mind, the oil geologist of the future will be a thoroughly trained man. Upon the four-square foundation of mathematics, physics, chemistry and biology, he will build his edifice. He will not be in a hurry. He will take plenty of time. He will understand the fundamentals of his science; physiography dynamics, stratigraphy, sedimentation, mineralogy, petrology, structure, and paleontology. He will bring to the solution of his daily tasks a mind stored with facts and sharpened by contact with other minds. But he will not be tied to tradition. He will be able to solve new problems as they arise daily.

Things yet undreamed of will confront the geologist of the future. When we stop to contemplate how far we have gone in the matter of oil geology some of us are, for the moment, inclined to be a bit boastful. Yet when we face about and see how far we still have to go, and realize how little we really know our boastings die on our lips, and we hang our heads in shame. So many, many problems, vital problems, are yet unsolved. Problems of the origin, underground transportation and accumulation of oil, problems of sedimentation and deposition of the rocks, problems of the organisms associated with oil strata, problems of structure, problems of this and of that, about which we sometimes talk glibly but concerning which in our sober moment we confess to ourselves that we know little or nothing. I have sometimes thought that some of us are like the boy passing a graveyard, whistling to keep our courage up.

Each year more and more the geologist is assuming the same relation to the oil industry as the mining engineer is to the mining industry. Formerly the mining engineer was a technical man pure and simple but he is now much more than that; he has learned to handle men and materials and to take an active part in the management of the mine. So the geologist of the future will be not merely an adviser to the company on technical matters, but will assume an active part in its operations.

Ten years ago the best oil geologist was the high booted, locklevel, aneroid man. Today the best geologist is the core drill, subsurface, microscopic-paleontological expert.

What will he be tomorrow?

FRANCE BUYS 75,000 TONS OF RUSSIAN OIL

The Rosta Agency, the official Soviet news agency, announces that the Oil Syndicate has concluded a contract with the French Ministry of Marine for the delivery of 75,000 tons of Mazout oil. M. Lomov, chairman of the Oil Syndicate, said this was the first transaction direct with the French Government and that he considered it more valuable to Russia than if double the quantity of oil had been purchased by the Standard or Shell companies.

"We are confident," M. Lomov declared, "that our exports of oil to France will increase considerably and become permanent."

BUSCH-SULZER DIESEL ENGINES IN PUMPING STATION OF HUMBLE PIPE LINE CO., SATSUMA, TEXAS

During the past six years we have supplied to the Humble Co. 34—165 HP, 2—250 HP, 7—400 HP. engines. Please let us figure with you. Our factory is close to the oil fields. We can make short deliveries and keep our shipment promises.

BUSCH-SULZER BROS. DIESEL ENGINE CO. ST. LOUIS, MO.

BIT AND JAR-STEEL

BOX-PIN-STEEL-SLIP-STEEL

UNDER-REAMER-BODY and CUTTER STEEL, DRILL COLLAR STEEL

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CAPPING and SOCKET STEEL TOOL-JOINT STEEL

SPECIAL-HIGH-GRADE

SPECIAL ALLOY STEEL **FORGING-BILLETS** QUALITY and SERVICE

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ANDREWS STEEL CO.

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TRUSCON
STEEL CO.
STANDARD BUILDINGS

Housing the Oil Industry

Truscon Standard Buildings fit the needs for incombustible structures in the oil industry in the producing, refining and marketing fields. Whether the buildings are of a permanent or temporary nature they are unrivalled for storage, warehouses, bunk houses, pumping stations, service stations, garages and a variety of other purposes.

Whether your need is for an all steel building, one with brick sidewalls and steel sash or any variety, the need can be met through the many combinations secured with Truscon Standard Buildings.

Their economies are to be found in speedy erection with few workmen, durability and the hundred percent salvage possible if razing and re-erection in other locations are proposed.

Send the coupon for interesting information

TRUSCON STEEL CO., YOUNGSTOWN, OHIO

Warehouses and Sales Offices from Pacific to Atlantic. For addresses see phone books of principal cities. Canada: Walkerville, Ont. Foreign Division: New York.

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HIGHWAY PRODUCTS
PLATFORMS & BOXES
FOUNDRY FLASKS
STEEL STAMPINGS

REVIEW OF RUSSIAN OIL INDUSTRY IN 1924

(Continued from Page 130)

at present to have these figures reduced by 50 per cent.

The Government export tax from Black Sea ports is 6.5 cents per barrel, thus making the overhead charges for petroleum products 56 and 48 cents for products from Baku and Grozny, respectively. The following paragraph will show how, under inefficient production methods, these 56 cents on Baku petroleum make any profit on exports extremely doubtful.

Labor Employed

The figures presented below are taken from the Government Annual Report and will be of extreme interest to American oil men. Considering that oil industry in Russia is the most efficient, the employment in other industries probably reaches astronomical numbers. The Baku region is discussed alone here. As shown on the previous pages last year's production of all Baku fields amounted to 31,300,000 bbls. (87,000 bbls. daily), of which quantity about 22,000,000 bbls. (62,000 daily) were refined and exported. To do this work an average of from 45,000 to 50,000 men were employed continually during last year. By different branches they were divided as follows:

Maintenance	25,639
Refineries	4,710
Drilling	8,511
Electric Power	1,563
Warehouse and Supply Plants	1,413
Shipping	1,385
Mills	996
Administration	680
Total	44,887

Out of this number 39,263 can be classed as skilled and unskilled labor and 5,624 as administration, office force and higher classes of foremen. The labor is cosmopolitan in its character, Russians, Persians, Tartars, and Armenians represent the main groups.

The Azneft developed a basic wage scale for all its workers. This scale follows. (Wages are given in dollars at the present rate of exchange, 50 cents to a rouble).

Scale No.	Ratio	Basic Wage (Per Month)
1	1.0	$ 7.25
2	1.3	9.42
3	1.6	11.60
4	1.8	13.05
5	2.0	14.50
6	2.5	18.13
7	2.8	20.30
8	3.1	22.47
9	3.5	25.35
10	3.8	27.50
11	4.2	30.45
12	4.6	33.35
13	5.0	36.25
14	5.5	40.00
15	7.0	55.80
16	8.5	61.60
17	10.0	72.50

All men are assigned a certain scale number, not necessarily a whole number. Thus the lowest scale for unskilled labor in 1924 was 4.98 or an equivalent of $14.50 per month. The engineers, office workers, geologists, chemists, etc. are assigned number 9.54 as minimum, equivalent to $26 per month. However, the above figures are only basic. Various additional amounts are paid monthly. There are extras for family (wife and every child), for housing, for heating and light, etc. It is safe to increase the basic wages by 75 per cent in order to obtain real pay rolls. Cooperative stores are operated by Azneft, in many instances selling below cost. Taking the above into account, the unskilled laborer is paid about $24 per month, and the lowest for higher employes is about $50. Bonuses for extra footage are given to drillers; for extra production to superintendents and higher officers, raising their salaries anywhere from 100 per cent to 200 per cent.

Assuming that 50,000 men are paid on an average of $25 per month (a very conservative estimate) and that there are about 2,600,000 bbls. produced monthly, the cost of production in labor alone amounts to 48 cents per barrel. However, considering that only two-thirds are disposed of it is safe to increase the cost to 70 cents per barrel. Adding railway charges of 50 cents and the 6 cents export tax the cost of petroleum products f.o.b. Batoum is $1.25, assuming that there are no field expenses besides the labor at all. According to information from men well acquainted with Baku conditions the present cost of production, not including labor, is around 75 cents per barrel. Therefore, f.o.b. Batoum, the cost of crude approximates $2.

If we will consider that there are no Government taxes to be paid, no royalties of any kind, no dividends to be taken in account, no depletion or depreciation charges it will become evident that the cost of production is amazing.

All considered and taking current average prices in Europe for petroleum products, the oil industry of Soviet Russia is operating at a very considerable loss. Probable Government subsidies amount to $15,000,000 during the 1923-1924 operating year alone.

AMAZING GROWTH OF OIL-USING SHIPS

(Continued from Page 152)

prevail, an increase of fuel requirements will necessarily result. It is possible, however, that some of the tonnage built during the war and at present unemployed may not need to be replaced. The great disturbing factor of the war renders it difficult to gauge what otherwise would have been the present-day normal relation of quantities, as between coal and oil supplies as ships' fuel. Generally speaking, however, it may be said that oil has come into use (including motor ships) for 27 per cent of the world's merchant shipping, with very little effect on the production and distribution of coal, although otherwise coal might have shown an increase. To some extent new coal developments were checked during the war, and therefore but for the relative abundance of oil, the world might have been faced with a fairly severe stringency of fuel supply, with consequent increase of price, till the shortage could be overtaken."

EASTERN FIELDS

(Continued from Page 52)

Strabane Township, Washington County, Pennsylvania, is going the way of all new discoveries in old territory. Tague & Lutton have completed a second test on the J. S. Mansfield farm. It is a duster, 500 feet north of the No. 2 on the R. G. Lutton farm, a good producer. In Washington Township, Green County, the Brown Farm Oil & Gas Co. has at last completed its No. 4 on the David Brown farm. It is a gasser in the Gordon sand. In Springhill Township, the Dunbar Oil & Gas Co. has a light show of oil in the Gordon sand at No. 3 on the M. S. Hostettler farm. In Richhill Township, the Natural Gas Co. of West Virginia has a gasser in the Big Injun sand at a second test on the Jacob Ewing farm. In Jackson Township, the Milliken Oil & Gas Co.'s second test on the Edward Milliken farm is a gasser in the fifth sand.

Negotiations that have been pending for some time have been consummated. The properties involved in the merger are the West Virginia Central Gas Co.'s holdings in Harrison, Lewis, Upshur, Braxton, Gilmer and other counties in West Virginia. The Cumberland & Allegheny Gas Co., a recently organized concern, becomes the holder of the West Virginia Central Gas Co., the Eastern Oil Co. and the Maryland Gas Co. In the transfer is included the leaseholds, franchises, pipe lines, and compressing stations connected therewith. The money consideration has not been made public. J. Alex Meyers, of Philadelphia, is to be the manager of the new company. It is understood he contemplates no change in field operations. James Fitzgerald, who has had charge for many years of the West Virginia Central Gas Co.'s operations, will direct field work.

Taken Over by Transcontinental Oil

The Transcontinental Oil Co., as announced, has taken over the Midland Oil Co. of West Virginia and the Columbia Gas Co. of Pittsburgh. Both are marketing companies and will fit in with the Transcontinental Oil Co.'s marketing organization. The Midland Oil Co. owned seven service station and two terminals in southwest West Virginia. The Columbia company is a marketing concern, doing business in Pittsburgh. It has one bulk station and three service stations.

Patents Pending

CHALLENGER
Lawn or Sidewalk
STAND
—*Challenges Attention*

It's one thing to have a corking good sign and quite another matter to make that sign sit up and speak!

The Challenger Stand is designed especially for service stations where it is desired to have metal or lithographed signs displayed in approved fashion.

The stand shown to the left is our lawn or sidewalk type. There are also various styles of Challenger flange or bracket types.

TheLawn or Sidewalk Stand is constructed from a solid Tee Member running from foot to foot without a break, thus affording secure rigidity. It supports two signs—a circular sign 30" in diameter and below this a rectangular sign 12" x 24" for appropriate slogans or advertising different products.

Finished in oven baked enamel, practically rust-proof and immune to climatic conditions.

Shipped in knocked-down condition, easy to assemble.

Orders placed NOW, will insure you of delivery before the large Spring Demand sets in.

THE SALESMAN WHO DIRECTS BUSINESS YOUR WAY

MICHIGAN FORGE & TOOL COMPANY

7360 Richmond Ave. Detroit, Mich.

PRODUCERS AND REFINERS

NATURAL GASOLINE MANUFACTURERS
BUYERS AND SELLERS
OF
HIGH GRADE REFINED PRODUCTS

Noble Oil and Gas Company

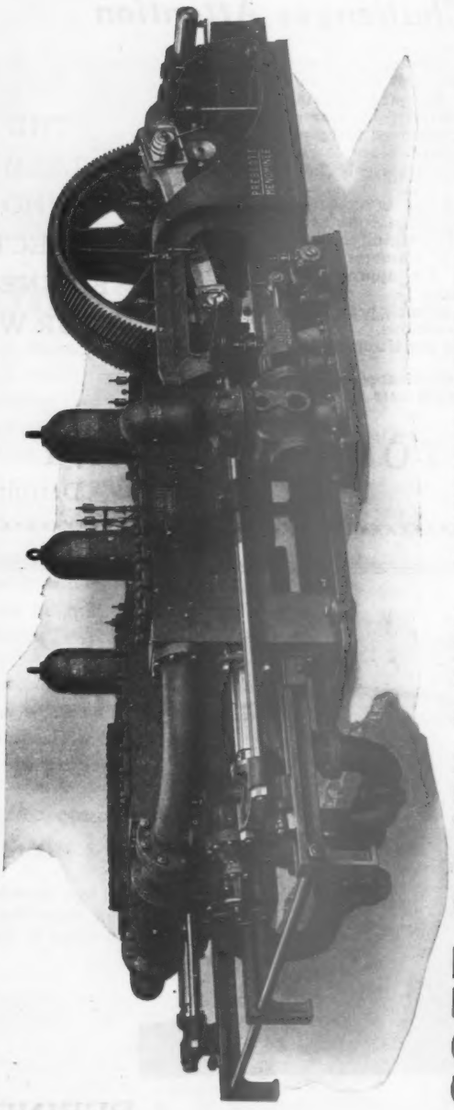
608 WRIGHT BLDG. TULSA, OKLA.

PRESCOTT MENOMINEE

PIPE LINE PUMPS

PRESCOTT MENOMINEE

PHOTO SHOWS STANDARD 25,000 BBL. MAIN LINE PUMP AS RECENTLY FURNISHED THE HUMBLE PIPE LINE CO. HOUSTON, TEXAS



FIELD PUMPS
4000 to 6000 BBLS.
DAILY CAPACITY
CARRIED IN STOCK
TULSA AND
FACTORY
IMMEDIATE
DELIVERY

THE PRESCOTT COMPANY, MENOMINEE, MICHIGAN, U.S.A.

ROCKY MOUNTAIN AREA

(Continued from Page 38)

Simms Oil Co. No. 1 Manning, sand 3,006-23 feet, 700 bbls.

Humble Oil & Refining Co.'s No. 3 Lindley, sand at 2,974-94 feet, 4,000 bbls.

Farish, Watts & Collins' No. 3 Jackson, sand at 2,960-3,010 feet, 1,800 bbls.

Godley Oil Co.'s No. 1 Ferguson, sand at 2,992-3,016 feet, 500 bbls.

Boyd Oil Co.'s No. 3-A Wilson, sand at 3,012-25 feet, 100 bbls.

Ray & Massie's No. 1 Teale, sand at 3,016-18 feet, 250 bbls.

Simms Oil Co. and Marland Oil Co.'s No. 9 Simmons, sand at 2,931-75 feet, 750 bbls. by heads.

Boyd Oil Co.'s No. 1-B Smith, sand at 2,987-3,007 feet, 2,000 bbls.

Humble Oil & Refining's No. 1 Peter Stubbs, sand 2,994-3,004 feet, 1,900 bbls.

Boyd Oil Co.'s No. 2-A Smith, sand at 2,978-98 feet, 2,800 bbls.

Farish, Watts & Collins' No. 1 Wright, dry and abandoned at 3,198 feet.

Gulf Production Co.'s No. 4 Lindley, dry and abandoned at 2,999 feet.

Humble Oil & Refining Co.'s No. 2 H. B. Stubbs, dry and abandoned at 3,050 feet.

Pure Oil Co.'s No. 2 Crouch, dry and abandoned at 2,985 and its No. 3 Crouch abandoned at 2,928 feet.

Southern Exploration Co.'s No. 8 Wright, abandoned at 2,818 feet.

Pipe Line Runs

Salt Creek	54,790
Teapot	1,790
Big Muddy	3,100
Grass Creek	1,010
Elk Basin	580
Greybull	20
Rock River	3,200
Lance Creek	770
Poison Spider	160
Osage	350
Hamilton Dome	690
Lander	200
Byron	60
Pilot Butte	30
Lost Soldier	4,930
Ferris	110
Cat Creek	3,115
Sunburst	3,840
Craig	1,100
Fort Collins	700
Florence	275
Miscellaneous	500
Total	81,320

EAST CENTRAL TEXAS

(Continued from Page 38)

wells and those of affiliated companies only, and the other producers must look out for themselves. Some companies have put in steam plants to pump, though the greater number rely upon the gas engine.

Fergus County, Montana.

Considerable leasing of lands and application for permits is noticed in the north part of Fergus County, Montana, the past month. The acreage taken up to date comprises over 10,000 acres lying along the north line of Fergus and also in the south parts of Blaine and Choteau Counties. Blaine and Choteau corner on the north line of Fergus and this point seems to be the area sought after.

According to the geological reports available, there are several untested structures in that area, generally referred to as the Winifred Domes, but the Ohio Oil Co., drilled a dry hole on the Sherrard structure lying in Blaine County, just north of the Fergus County line. The leases and applications are mainly taken by local people and oil companies and it is considered the activity is due largely to a recent bulletin of the Geological Survey which describes this area as the faulted area south of the Bearpaw Mountains, the author considering it has oil or gas possibilities.

Consolidated Royalty

The Consolidated Royalty Oil Co.'s seventh annual statement shows cash on hand and in bonds and due on account, $793,248.77 with no accounts payable. The firm's income was practically $500,000 for the past year while the expenses amounted to $45,306 97 and the stockholders received $468,0?6 88. The president of the company is former Gov. B. B. Brooks. In his annual statement Governor Brooks states that the opening of the Lakota sand area in Salt Creek will materially increase the value of the holdings of the Consolidated Royalty in that field and the firm's officials expect a prosperous year for 1925.

Prairie Calls In Crude Certificates At Current Prices

The Prairie Oil & Gas Co. in a notice issued on Friday, January 23, called in the outstanding crude certificates which remained in the hands of producers who did not not sell their oil to the Prairie last October when the company announced that it would pay the current price for all crude stored under its storage plan of July 17. Those operators who did not sell their oil at the October market price, which ranged from 90 cents to $1.25 according to gravity, will receive from 10 cents to 35 cents more per barrel for having waited.

The announcement of the Prairie company made Friday read as follows:

Notice is hereby given to all owners and holders of storage oil statements and receipts issued by the Prairie Oil & Gas Co. under its oil storage plan of July 17, 1924, who did not avail themselves of the offer contained in the letter of the company dated October 14, 1924, to purchase the oil evidenced by said statements and receipts at the price stated therein without storage charges, that the Prairie Oil & Gas Co. does now elect to purchase all of the remaining oil that it holds in storage under the terms and provisions of its storage plan of July 17, 1924, and in accordance with the terms and conditions of the statements and receipts issued covering such oil.

The price the Prairie Oil & Gas Co. elects to and will pay for such storage oil, less accrued storage charges, is its posted market price at present in effect as follows:

Below 30 degrees Baume gravity, $1.00 per bbl.

30 degrees to and including 32.9 degrees Baume gravity, $1.15 per bbl

33 degrees to and including 35.9 degrees Baume gravity, $1.35 per bbl.

36 degrees to and including 38.9 degrees Baume gravity, $1.50 per bbl.

39 degrees Baume gravity and above, $1.60 per bbl.

Payment will be made for the remainder of such storage oil under the above election on February 7, 1925, at the office of E. T. Patterson, treasurer of the Prairie Oil & Gas Co., Independence, Kan., upon the presentation to him for cancellation of all storage statements and receipts covering such oil. Owners and holders of statements and receipts covering such storage oil are requested to surrender the same to the treasurer of the company, aforesaid, prior to February 7, 1925, in order that prompt payment may be made for such oil on that date. All oil covered by these storage receipts not surrendered will, in any event, under this election, be purchased as of January 23, 1925 and the money value represented thereby will be held upon the books of the company until the surrender of said receipts.

This notice will be published in the Independence Daily Reporter at Independence, Kan., on January 23, 1925, for the information of all persons concerned in accordance with the provisions of the oil storage plan of the company and the terms and provisions of the statements and receipts covering the storage of such oil.

The Prairie Oil & Gas Co.
By DANA H. KELSEY,
Vice President and General Manager

GEOLOGISTS ON CONSERVATION

E. W. McCreary, F. P. Geyer and James H. Gardner have been named by E. W. Marland as a committee to supply geological advice in connection with the investigating work being done by the Federal Oil Conservation Board. The three appointeees have left for New York. Mr. McCreary is with the Tidal Oil Co., Mr. Geyer is with Marland, and Mr. Gardner is president of the Gardner Petroleum Co. and the American Association of Petroleum Geologists.

Be Guided by Those Who Have Bought "E-Z-BILT" Buildings

MUTUAL OIL COMPANY
905 KENNEDY BUILDING
P. O. BOX 1112
TULSA, OKLAHOMA

September 10th, 1924.

The Braden Company,
Tulsa, Oklahoma.

Gentlemen:-

Last April you erected a 40 x 40 Steel Building for us at West Tulsa. We feel that it is only fair to inform you that we consider the building entirely satisfactory. It has proven to be all that you claimed of it.

The order when given to your salesman was contingent upon delivery, and inasmuch as the building was delivered on time we consider your service par excellent.

We feel that Manufacturers are anxious to receive information relative to their products and therefore, we take this opportunity to forward you our opinion.

Yours very truly,
MUTUAL OIL COMPANY,

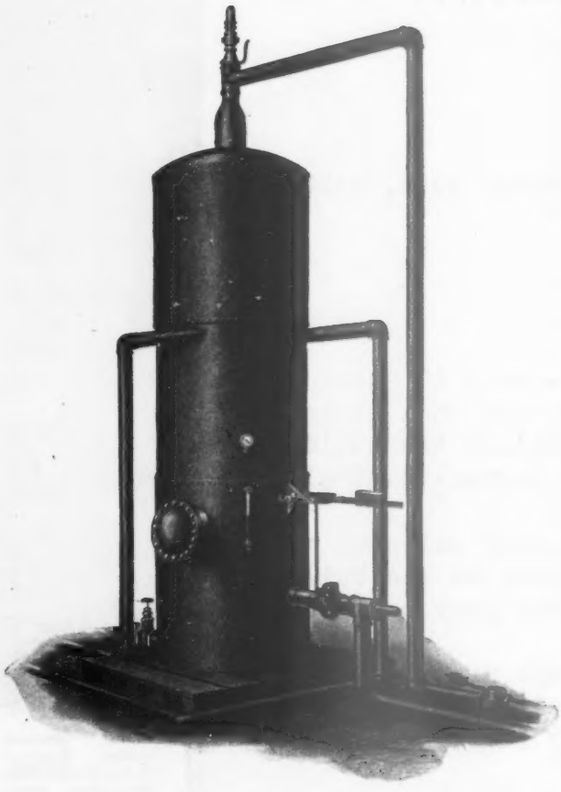
GFB/M By Geo. F. Burke

Mutual, Marland, McMan, Roxana — all use Braden "E-Z-Bilt" Steel Buildings, and all have told us of the perfect results received. "E-Z-Bilts" are well made, promptly shipped, easily erected by unskilled labor, and suited to every oil-industry need. Our Engineering Department will gladly give you recommendations and prices on the building you are interested in.

THE BRADEN COMPANY
Tulsa, Okla.

BRADEN "E-Z-BILT" BUILDINGS

Trumble Gas Traps are Found Wherever Oil and Gas Is Found



For many years Trumble Oil and Gas Separators have been used all over the world and a saving of both oil and gas has been effected by their use. A saving of oil is effected by holding the lighter constituents in the oil while the separation is taking place, under pressure. The gas when separated from the oil is confined to pipe lines where it may be carried to any place where it may be desired.

Oil and gas conservation is an important item in the operating fields today and may be the difference between profit and loss in operating a small field.

TRUMBLE GAS TRAP COMPANY

804 Higgins Building — William C. Rae

LOS ANGELES, CAL. — SALES MANAGER

Eastern Representative:

C. F. CAMP

14 East Seventh Street (P. O. Box 289)

TULSA, OKLAHOMA

CALIFORNIA FIELDS

(Continued from Page 40)

General Petroleum is pulling the 6¼-inch in No. 2 Dabney and will deepen this hole, now at 3,285 feet, in an effort to boost production. The Associated is making preparations to redrill and deepen No. 2 Wardlow, now at 3,334 feet, and make a successful producer of it, if possible. The Petroleum Midway is making good progress with its new hole, No. 5 Brown, and reports a depth of 2,845 feet.

Montebello

The Standard is setting a string of 6¼-inch in No. 2 Howard Park at 4,203 feet in the Montebello Field and while this hole has only had a few minor showings above 4,200 feet, it may yet result in commercial production. The company has plugged back No. 62 Baldwin from 4,525 feet to 3,889 feet and will make a test of this hole, together with No. 63 Baldwin, now at 3,888 feet, in the near future. The McGinley Oil Co. spudded in well No. 20 during the past week and is just getting underway at 211 feet. As was expected, the Standard pulled out of the Rideout Heights section of the old Whittier Field and is abandoning No. 1 Patton as a dry hole at 6,050 feet. The Mohawk Oil Co. is also retiring from the district and is plugging up No. 1 Denni, drilled to 3,807 feet. The Mohawk did not believe that the results attained on adjoining properties justified any further expenditure of money and this, together with the fact that the hole was in a bad mechanical shape, were the principal factors contributing toward the abandonment of the well.

The Pan-American is going ahead in No. 1 Jesurum at 3,936 feet, the prevailing formation being a gray sand. The Petroleum Midway has not resumed work on No. 1 Pellisier at 4,481 feet, No. 1 Seward at 4,085 feet and No. 1 Witte at 3,682 feet but is still working with No. 1 Rideout at 4,620 feet. None of these tests look promising.

The Standard made good footage in all four of its drillers at Coyote, No. 40 Emery showing 2,800 feet of hole, No. 100 Murphy, 2,130 feet, No. 102 Murphy, 2,711 feet, with No. 100 Murphy standing cemented at 4,163 feet. The company's No. 21 Home at Whittier is standing cemented at 3,995 feet. The Union is abandoning No. 54 Graham & Loftus at Coyote as a dry hole at 4,800 feet. No. 55, on the same lease, a deep test at 5,370 feet, is showing a few rainbows but is still uncertain of production. No. 56 Graham and Loftus is held up with a fishing job at 3,427 feet.

The Brea Canyon Oil Co.'s recent completion at Fullerton has settled down to about 675 bbls. a day but is flowing quite steadily at this rate. The company has No. 38 rigged up and ready to start drilling. In the Richfield area, the Chicksan Oil Co. is going ahead in No. 2 Bradford at 1,625 feet, while the General Petroleum is making hole in No. 6 Thompson at 2,420 feet. The Chansler-Canfield Midway Oil Co. is redrilling No. 1 Bradford at 4,065 feet and will carry this hole down to the deep sand found by the Chicksan in No. 1 Bradford. The Shell is preparing to deepen No. 3 Orange at 3,780 feet, while the Tonner Oil Co. is going ahead in No. 1 Swan at 259 feet. The Standard is working on No. 3 Kramer at 4,226 feet, No. 18 Kramer at 1,345 feet and No. 2 Collins at 4,671 feet.

Inglewood

The Standard finished a 160 bbl. pumper at Inglewood when No. 1 Vickers was put on the beam at 1,910 feet. The output tested 17.1 degrees and showed a cut of 2 per cent. A rig is being erected for No. 2 and drilling should start within a week or 10 days as the boilers are all set. This hole is some distance from the well just brought in. The company is going ahead at 2,125 feet in well No. 3 on Los Angeles Investment lease No. 1 and should reach the pay very shortly. Well No. 1 on the Los Angeles Investment lease No. 2 is held up with a fishing job at 4,655 feet but No. 1 Potter-Smith is going ahead steadily at 5,595 feet.

The Pan-American completed its first producer in this field in quick time when No. 1 Sentous was placed on the beam at 1,882 feet. It pumped 110 bbls. of 16.4 gravity oil which cut 2 per cent sand. The company is building a rig for No. 1 Cone for early work and should spud in before the end of the month. The Pacific Oil Co. spudded in No. 2 Baldwin and is at present drilling ahead in a boulder formation at 1,200 feet. The Petroleum Midway is building a rig for No. 1 Smith, offsetting the Mohawk's No. 1 Machado, and will probably spud in within the next week or 10 days. Oscar Howard, a Mid-Continent operator who was very successful at Santa Fe Springs, has acquired a lease in this area and has staked location for his first hole.

The Mohawk has not yet erected a rig for No. 2 Machado, but has material on ground ready for the rig builders. Well No. 1 has been giving a lot of trouble because of sand and although it has been subjected to a number of clean out jobs, it has only been on production for a few days since its original completion. Meyer & Yerkes succeeded in securing a small flow in their No. 1 Newport by introducing steam into the hole and although this was only a preliminary test, it was considered favorable. Heretofore this well has been a small intermittent pumper from the 1,100-foot level. The Newport Petroleum has temporarily suspended work on its 200-foot tunnel, pending the installation of heavier machinery, but should be in a position to resume digging within the next two weeks. The Shell's deep test at Seal Beach, No. 1 Bixby, is flowing salt water from 6,142 feet and will probably be allowed to continue for some time in order to determine whether there is any oil present. On the Bryant property, No. 1 is flowing about 65 bbls. of oil and 1,600 bbls. of water, while No. 3 is making hole at 2,340 feet. No. 2 Bryant staged a rather spectacular gas blowout at 4,390 feet during the early part of the week. It is estimated that the volume of gas was around 10,000,000 feet per day. The well has since sanded up, however, and the company is making preparations to ascertain whether any material damage has been suffered by the hole. The rig was a steel one and withstood the ordeal in a very satisfactory manner. No. 1 Bryant hit the same gas zone before its completion and the blowout in No. 2 is considered a good omen. The latter is more favorably located and should be a better well than No. 1 No work has been done on the Dabney Oil Syndicate's No. 1 at 3,100 feet or the Seal Beach Oil Co.'s hole at 5,185 feet for several months and, since they are not favorably located, they have been practically eliminated from consideration.

Miscellaneous Drilling.

The Wilshire Oil Co. seems to have a dry hole in its Bandini wildcat, as this test has not yet shown a thing notwithstanding the fact that it has passed the 4,970-foot level. The Shell is abandoning No. 1 Loomis, its Bell wildcat, after going to 5,406 feet. The last 1,000 feet of hole was a gray sand devoid of any indications. The Shell only used 1,075 feet of 13-inch in this hole and thus kept down expenses. The Associated is setting the boilers and rigging up No. 101 Fox Hills in the Beverly Hills region of the old Salt Lake Field and will begin drilling about February 1.

The Shell has reached a depth of 4,620 feet in No. 1 Virginia at Los Cerritos, northwest of Long Beach and since the well has not shown any encouragement to date, it is beginning to look somewhat doubtful. The Marland at Davidson City, between Long Beach and Dominguez, is drilling in a hard sand at 765 feet. The Winwell Oil Co. cored a hard sand with a few favorable streaks in its Hawthorne wildcat at 5,400 feet and while no promising oil sand was present, the hole will be cored ahead in the hope that something good will be picked up soon. The Manhattan Pacific is just drilling out the cement at Hermosa Beach and will start making hole at 3,800 feet immediately.

The Standard is quitting the Los Nietos district and abandoning No. 1 Culp at 5,770 feet. The Associated suspend-

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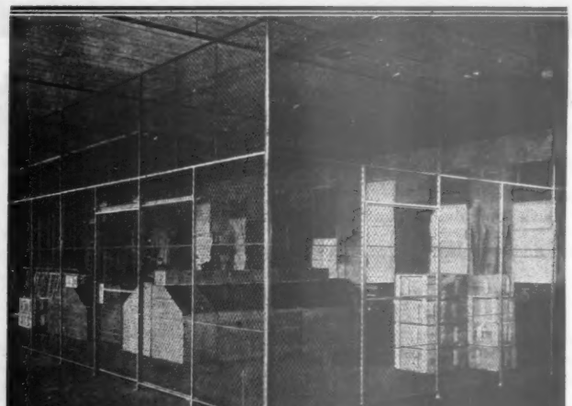

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ed work on No. 2 McNally, a few miles away at La Mirada, several months ago at 6,018 feet. These two deep holes will probably be considered as satisfactory tests, since neither one showed a thing from top to bottom. The Associated, using a rotary, is going ahead in its Newhall test at 2,700 feet, while the Union, drilling with cable tools, is making hole in its Saugus wildcat, a short distance away, at 1,300 feet. None of the companies who have acquired acreage in the Ocean Park Heights area made any move to start work, as all of them are still leasing whatever property is available and apparently do not wish to boost up land values. The Union, Marland, Standard and Petroleum Midway have tied up what seems to be the cream of the territory in this area. The Union started the ball rolling but others soon began securing protective acreage. The Wucherer-Gray Oil Co. is refinancing and if sufficient money is secured will resume work on its Irvine leases in the San Joaquin Hills. The Van Nuys Community Oil Co. is negotiating with the Warrington Drilling Co. in an effort to have the latter carry its well in the San Fernando Valley to completion, or at least to a specified depth in consideration of an assignment on part of its large lease. This area is not looked upon with any degree of favor, following the Standard's unsuccessful operations at San Fernando a few years ago.

McKittrick Field Extended.

The Western Pacific Oil Co. is drilling ahead in its San Bernardino wildcat in a blue shale at 2,665 feet. The Pacific Coast Petroleum Corp. recovered from a fishing job in its San Diego test and is about ready to resume drilling at 3,121 feet. The Washington Petroleum (Keefe-Risden) finished their well No. 1 on the McKittrick front, Section 8-30-22, and secured a 322-bbl. pumper from a depth of 2,648 feet. The company reports 151 feet of oil and, and although this well has since sanded up, it should be good for at least 200 bbls. a day on steady production. The company's completion is of paramount importance since it extends the McKittrick Field and opens up several hundred additional acres for development. The Washington Petroleum finished this new producer on a 160-acre lease.

The Chanslor-Canfield Midway Oil Co., in order to prove up its holdings near Delano in the San Joaquin Valley, has taken over the Sentinel's 2,100-foot hole and will carry it on down for a test. The Pan-American has reached a depth of 4,580 feet in its Kern River Bluffs wildcat a few miles south of Bakersfield but has not yet hit an oil sand capable of producing. The St. Helens is at 3,400 feet, the Marland at 2,660 feet and the Central at 2,449 feet. The Shell is making splendid progress on No. 1 Mountain View in the Weed Patch area and reports 2,648 feet of hole. The Main at Wasco is getting quite deep, the bit going ahead at 4,376 feet.

The Snowolene will make a production test of its Jacalitos Dome wildcat near Coalinga at 3,880 feet. The prospects, however, are none too encouraging. The General Petroleum is drilling in Kettleman Hills at 6,123 feet and each foot of hole added makes the outcome look more doubtful. Even the most optimistic are becoming dubious. The only favorable indication so far has been some gas higher up in the hole. The Tehmesecal Petroleum Co. (E. L. Doheny, Jr.) has taken over the B. & L. Oil Co.'s new well and lease at Piru and will start several new tests shortly. A steel rig has been erected for No. 2 and pipe line connections are being made in order to take care of the output from No. 1, which is good for 140 bbls. a day from 1,765 feet.

NORTH CENTRAL TEXAS

(Continued from Page 36)

feet; Thompson and others' No. 2 Williams, drilling at 1,400 feet.

Eastland County Drilling

Brothers Oil Co.'s No. 1 Norton, drilling at 840 feet; Gallagher and others' No. 1 Goodwin, drilling sand at 2,905 feet; Reclamation Oil Co.'s No. 6 Bond, fishing at 2,095 feet; States Oil Corp.'s No. 3 Davenport, drilling at 1,810 feet; same company's No. 14 Harrell, on sand at 1,875 feet; Burkett and others' No. 1 Stanton, drilling at 2,025 feet; Eastland Oil Co.'s No. 1 Hazel, drilling at 1,530 feet; Kimmell and others' No. 1 Lamb, drilling at 500 feet; Ladd and others' No. 1 Owens, drilling at 1,920 feet; McMeans and others' No. 1 Storm, drilling at 1,415 feet; Root and others' No. 1 Hazel, underreaming; Weaver Oil Corp.'s No. 1 Dulin, drilling at 2,700 feet.

Wildcats Drilling

Hutchinson County—Dixon Creek Oil Co.'s No. 1 Smith has 50,000,000 feet of gas at 2,885 feet; New Domain Oil Co.'s No. 1 Barton is drilling at 350 feet; Prairie Oil & Gas Co.'s No. 1 Shaw has 30,000,000 feet of gas at 2,905 feet; Tex-O-Oil Co.'s No. 1 Johnson has 7,000,000 feet of gas at 1,175 feet.

Carson County—American Refining Co.'s No. 3 Burnett is drilling at 2,720 feet; Crosby Oil Co.'s No. 1 Burnett, setting casing at 2,835 feet; The Texas Co.'s No. 2-A M. C. Burnett, drilling at 2,515 feet; same company's No. 5 Burnett, underreaming.

Gray County—Anderson and others' No. 1 Bradford, drilling at 1,090 feet; Clark and others' No. 1 Combs and Wesley, drilling at 2,675 feet; Danciger Oil & Refining Co.'s No. 1 Bowers, spudding; Dillard and others' No. 1 Henry, drilling at 3,210 feet; Holmes and others' No. 1 Morse, drilling by tools at 2,390 feet.

Wilbarger County

Wilbarger County—Atlantic Oil & Production Co.'s No. 1 Parker and others, drilling at 750 feet; Barkley and others' No. 1 Stephens, drilling at 2,122 feet; Bridwell and others' No. 3 Dill, drilling at 900 feet; same company's No. 4 Dill, drilling at 800 feet; same company's No. 3 Stephens, fishing at 2,250 feet; Bridwell and others' No. 1 Waggoner, fishing at 880 feet; Dill Farm Oil Co.'s No. 1 Dill, underreaming; Humble Oil & Refining Co.'s No. 1 Dill, underreaming; Humble Oil & Refining Co.'s No. 2 Castlebury, drilling at 650 feet; same company's No. 4 Castlebury, drilling at 645 feet; same company's No. 5 Castlebury, drilling at 555 feet; same company's No. 1 Waggoner, drilling at 1,130 feet; Kolp and others' No. 2 Waggoner, drilling at 1,150 feet; Levy and others' No. 1 Waggoner, drilling at 1,015 feet; Levy and others' No. 1 Wheeler, drilling at 800 feet; Lippard Oil Co.'s No. 1 Fluhman, drilling at 600 feet; Little Oil Co.'s No. 1 Youngblood, drilling at 1,450 feet; Magnolia Petroleum Co.'s No. 66 fee, drilling at 1,315 feet; McCamey and others' No. 2 Richardson, drilling at 680 feet; Petroleum Production Co.'s No. 3 Dill, drilling at 800 feet; Priddy and others' No. 1 Castlebury, drilling at 750 feet; same company's No. 2 Castlebury, drilling at 500 feet; Ray and others' No. 6 Bond, drilling at 350 feet; Ruff and others' No. 1 Waggoner, drilling at 750 feet; Shipley and others' No. 1 Murphy, fishing at 300 feet; Skinner and others' No. 1 Streit, drilling at 1,550 feet; South Vernon Oil Co.'s No. 6 Stephens has show of oil at 1,960 feet; same company's No. 8 Stephens has show of oil at 1,945 feet; same company's No. 9 Stephens, drilling at 1,750 feet; same company's No. 11 Stephens, drilling at 1,945 feet; Staley and others' No. 1 Stephens, drilling at 600 feet; same company's No. 1 Waggoner, drilling at 1,700 feet; The Texas Co.'s No. 1-B Castlebury, underreaming; same company's No. 297 Waggoner, underreaming; Tippit and others' No. 1 Sheldon, drilling at 1,900 feet; Wood and others' No. 1 Boyer, drilling at 1,570 feet; same company's No. 1 Streit, drilling at 400 feet.

Baylor County: Lehman and others No. 1 Shawver, drilling at 1,150 feet; Richardson Brothers' No. 1 Wallace, drilling at 750 feet; Skinner and others No. 1 Martin, drilling at 450 feet; Texhoma Oil & Refining Co.'s No. 1 Porterwood, drilling at 1,290 feet.

Clay County: Cumley and others No. 2 Stine, drilling at 1,630 feet; Ashcroft and others' No. 1 Chilson, drilling at 330 feet; Mills and others' No. 1 Holloway,

KANSAS FIELDS

(Continued from Page 32)

up for No. 5 Teeter, C NW NE NW, Section 15-23-9. The Tidal Oil Co.'s No. 1, SW cor. NW SW, Section 13-23-13, was drilling at 300 feet. The Connell Petroleum Co. abandoned the rig for No. 1, NW cor. SW NW, Section 7-22-11. The Empire Gas & Fuel Co. was building a rig for No. 1 Carth, C SW SW NE, Section 22-22-11. Milligan and others had a rig up for No. 4 Bersie, C NW NW SE, Section 22-22-11. The Sinclair Oil & Gas Co. had rigs on the ground for No. 9 Browning, C SE NE SE, Section 19-22-10, and No. 10 Browning, C SW NW SW, Section 20-22-10. The Mid-Kansas Oil & Gas Co. had a rig on the ground for No. 16 Martindale, C NW NE SE, Section 31-23-10.

Marion County

The Ward Petroleum Co.'s No. 1 Carpenter, NE cor. SE SW, Section 31-20-4, Marion County, was dry at 2,685 feet.

Coffey County

The Tidal Oil Co.'s No. 1 Bahr, SW cor. NW SW, Section 13-23-13, Coffey County, was spudding in.

Russell County

The Valerius Oil & Gas Co. had staked locations for four new wells on the Oswald lease, Section 8-12-15w; No. 2, SE cor. SW SE; No. 3, NW cor. SW SE; No. 4, SW cor. NE SW; and No. 5, NE cor. SE SW. The Prairie Oil & Gas Co.'s No. 1 Hill, NE cor. NW NE, Section 13-13-14w, was shut down at 3,330 feet. The Alcorn Oil Co.'s No. 1 Sellers, SE cor. Section 36-15-13w, was shut down with a hole full of water at 3,405 feet. The Valerius Oil & Gas Co.'s No. 3 Oswald, NW cor. Section 17-12-15w, was drilling at 425 feet. The same owners' No. 3 Ed Oswald, C SE SW, Section 8-12-15w, was pulling the big pipe at 2,946 feet. The Derby Oil Co.'s No. 1 Sutton, C NE SW, Section 5-12-15w, was shut down at 710 feet. The Producers & Refiners Corp.'s No. 1 Mermis, SW cor. NW SE, Section 9-14-15, was shut down at 3,130 feet. The Skelly Oil Co.'s No. 1 Ed Oswald, NE cor. Section 18-12-15w, was rigging up.

Butler County

Recent reports from wells in Butler County were as follows: Imperial Drilling Co.'s No. 1 Benson, SE cor. NE NE, Section 27-24-6, shut down at 1,100 feet; Knightling and others' No. 1 Joseph, NE cor. Section 18-24-5, shut down at 2,790 feet; Vickers Petroleum Co.'s No. 1 Pennen, SE cor. SW, Section 32-24-4, rigging up; Mathews and others' No. 1 King, NE cor. NW SW, Section 17-24-4, rig up; Sandford & Gardner's No. 1 Brennen, NW cor. SE, Section 24-3-26, setting 10-inch casing; Hoyt and others No. 1 Harder, SE cor. Section 21-24-3, underreaming 6¾-inch at 2,835 feet; Phillips Petroleum Co.'s No. 1 Fitch, NW cor. NE, Section 5-25-4, drilling at 2,300 feet; Shawver and others' No. 1 Brainard, NE cor. Section 3-25-3, shut down at 2,140 feet; T. Miller's No. 1 Lampe, SE cor. Section 33-24-8, shut down at 630 feet; Foraker and others' No. 1 Palmer, SW cor. NE, Section 32-26-6, rig up; Sparta Oil Co.'s No. 1 Palmer, NW cor. SE, Section 32-26-6, shut down at 700 feet; Travis and others' No. 1 Sluss, NE cor. SW, Section 26-26-5, rig up; Hawkins and others' No. 1, NE cor. SE NW, Section 10-26-3, shut down at 1,530 feet; Ohio Fuel Co.'s No. 1 Huston, NW cor. SE SW, Section 6-25-4, location; Roy Ramsey's No. 2 Meyers, SE cor. SW SW, Section 27-28-5, 20 bbls. after shooting 120 quarts at 2,755-88 feet; Becker and others' No. 1 Hamilton, SW cor. NE, Section 33-27-7, shut down at 560 feet; Brice and others' No. 1 Barnhill, NW cor. NE, Section 12-27-7, timbers on ground; Wentz and others' No. 1 Gressler, NE cor. SE, Section 22-27-6, shut down at 400 feet; Shawver and others' No. 1 Clevinger, SW cor. SE NE, Section 29-29-5, shut down at 2,100 feet; Belpart and others' No. 1 Brush, SW cor. NE NW, Section 23-29-5, rig up; Walters Oil & Gas Co.'s No. 1 Robinson, NE cor. Section 3-29-3, shut down at 2,220 feet; J. Sharp's No. 1 Pettit SW cor. Section 22-28-6, spudded in and shut down; Tobin and others' No. 1 Lammanyer, SW cor. NE, Section 12-29-6, shut down at 2,000 feet.

Chase County

The Phillips Petroleum Co.'s No. 1 Erwin, NW cor. SW, Section 1-22-8, in Chase County, was drilling at 1,410 feet. Alter and others' No. 1 Halsinger, NW cor. Lot 10, Section 19-18-8, was shut down at 1,365 feet. The Kingwood Oil Co.'s No. 1 Elliston, C SE Section 21-19-6, was spudded in and shut down.

McPherson County

The Transcontinental Oil Co. had a rig up for No. 1 Erickson, SW cor. NW, Section 1-19-5w, McPherson County. The Ramona Oil Co.'s No. 1 Theissen, NW cor. SW, Section 26-21-5w, was drilling at 3,710 feet.

Clark County

The Watchorn Oil & Gas Co.'s No. 1 Marris, SE cor. NE NE, Section 20-32-12w, Clark County, topped limestone at 4,580 feet, and got a show of oil and gas at 4,928 feet.

Barton County

Hoffinger and others' No. 1 Smith, NE cor. SE NW, Section 17-19-11, Barton County, was running 12½-inch casing at 1,190 feet.

Sedgwick County

Curtiss and others' No. 1 McMullen, C NW Section 14-29-2w, Sedgwick County, was shut down at 3,625 feet. Bayley Tack's No. 1 Metcalf, C SW NE, Section 6-25-1, was spudded and shut down. Higgins and others' No. 1 Flemming, SE cor. SW, Section 2-29-2e, was shut down at 1,940 feet. Merriman and others' No. 1 Landon, SE cor. Section 14-28-2e, was drilling at 3,090 feet. Jasper and others' No. 1 Whitten, C SW quarter, Section 26-28-1w, was rigging up. T. Johnson's No. 1 Humacher, NW cor. SE, Section 29-29-2e, was shut down for lack of water at 2,925 feet.

Elk County

Baxter & Mitchell's No. 1 McIntire, C SE NE, Section 5-30-9, in Elk County, was dry and abandoned at 1,740 feet. Anderson & Anderson's No. 1 Hand, SW cor. NE SE, Section 21-31-9, was making 70 bbls. naturally from sand at 2,291-2,302 feet.

Lyon County

Swartz and others had a rig up for No. 1, SE cor. NE NE, Section 32-21-13, in Lyon County.

Mitchell County

The Alcorn Oil Co.'s No. 1 Beeler, NE cor. Section 10-9-8w, Mitchell County, was shut down at 3,615 feet.

Lincoln County

Benny Rosenthal's No. 1 Lambert, NW cor. SE NW, Section 31-12-10w, Lincoln County, was fishing for a dropped pipe at 3,258 feet. The Amerada Petroleum Corp.'s No. 1 Crawford, NE cor. SW SE, Section 16-11-7w, was shut down at 2,875 feet.

Hamilton County

The Wood Oil Co.'s No. 1 Ramson, NW cor. Section 5-26-41w, Hamilton, County, in the extreme western side of the State, was reported to have had a show of oil at 3,840 feet.

Graham County

The Keys Petroleum Co.'s No. 1 Paxton, SE cor. NW, Section 23-8-24w, in Graham County, was drilling at 1,974 feet.

Ellis County

Davis and others' No. 1 Smith, NW cor. Section 14-12-16w, in Ellis County, had a small show of oil at 3,281-85 feet and was shut down at 3,290 feet.

Riley County

The Empire Gas & Fuel Co.'s No. 1 Wordberry, SW cor. NE, Section 14-9-4, Riley County, was drilling at 1,200 feet.

Rice County

Jasper and others' No. 1 Walker, SW cor. NE, Section 10-18-6w, in Rice County, was shut down at 2,200 feet.

Reno County

Haynes and others' No. 1 O'Halloran, NW cor. SE NW, Section 28-25-6w, Reno County, was drilling at 3,465 feet.

Trego County

Martin McKay's No. 1 Kyser, SE cor. NW SE, Section 9-11-22w, Trego County, was shut down at 3,200 feet.

Saline County

The Brown-Woodward Oil Co.'s No. 1 Shelton, SE cor. Section 26-15-2w, Saline County, was drilling at 1,200 feet.

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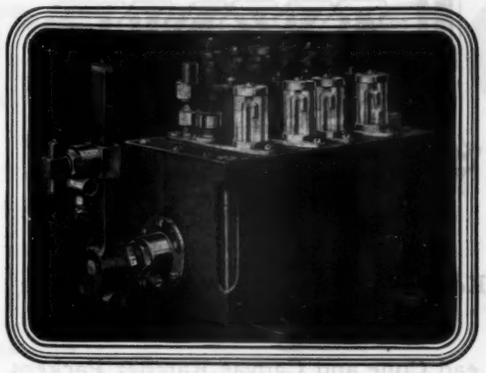

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spudding; Lone Star Gas Co.'s No. 21 Martin, drilling at 1,180 feet; same company's No. 16 Stine, drilling gas sand at 1,735 feet.

Montague County: Owenwood Oil Corp's No. 1 Salmon is drilling at 300 feet; The Texas Co.'s No. 3-A. Gist, drilling at 600 feet; same company's No. 1 Salmon, underreaming.

Throckmorton County: Skinner and others' No. 1 Mitchell, drilling at 400 feet; The Texas Co.'s No. 1 Smythe, drilling at 1,030 feet.

Shackelford County

Shackelford County: Cerf and others' No. 1 Poindexter, drilling at 2,665 feet; Eastland Oil Co.'s No. 2 Brooks, spudding; Haile and others' No. 1 Reynolds, underreaming; Hogan and others' No. 1 Elliot, spudding; Humble Oil & Refining Co.'s No. 1 Green, fishing at 3,100 feet.

Palo Pinto County: Britton and others' No. 3 Strawn Coal Co., fishing at 3,120 feet; Cameron and others' No. 2 Pollard, underreaming; Hughes and others' No. 1 Be'ding, drilling at 2,-800 feet; Litt'e Caddo Syndicate's No. 1 Fitzgerald, drilling at 1,300 feet; Phillips and others' No. 1 Stringer, drilling at 800 feet; Phillips and others' No. 1 Caudill, cleaning out at 3,800 feet.

Cal'ahan County: O'Donnell and others' No. 1 Cathey, drilling at 1,725 feet; Prewitt and others' No. 1 Crane, fishing at 1,875 feet.

Mitchell County: Eastland Oil Co.'s No. 1 Keynard, spudding; Harris and others No. 2 Brown, fishing at 300 feet; Sloan and others' No. 3 Miller, drilling at 3,005 feet; California Co.'s No. 1 Elder, drilling at 350 feet.

Sterling County: Fide'ity Oil Co.'s No. 1 Hull, drilling at 1,720 feet; Ford and others' No. 1 Foster, drilling at 1,400 feet.

Brown County: Gillman and others' No. 6 Newton, drilling at 1,300 feet; same company's No. 7 Newton, cleaning out at 1,290 feet; New Era Oil Syndicate's No. 3 Prather, drilling at 1,280 feet.

Reagan County: Big Lake Oil Co.'s No. 16 University, drilling at 300 feet; same company's No. 17 University, drilling at 400 feet; Brandon and others' No. 1 University, drilling at 2,700 feet; California Co.'s No. 1 University, drilling at 2,915 feet; Grayson and others' No. 1 University, dril'ing at 2,150 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Hughes and others' drilling at 3,290 feet; Simms Oil Co.'s No. 1 Sawyer, drilling at 500 feet; Texon Oil & Land Co.'s No. 1 Group 2, drilling at 5,260 feet; same company's No. 4 Group 1, fishing at 1,-750 feet; Transcontinental Oil Co.'s No. 1 University, drilling at 3,550 feet; Wrightsman and others' No. 1 Ingham, fishing at 600 feet.

MEXICAN FIELDS

(Continued from Page 36)

at 1,720 feet; No. 146 cemented 8-inch in the San Felipe at 1,200; No. 145 is in shale at 480 feet, and No. 150 is rigging. Mexican Gulf Oil Co.'s No. 69, Lot 1, is in brown and white lime at 1,886 feet. Mexican Sinclair Petroleum Corp.'s No. 35, Lot 2, is in gray lime at 2,130 feet, and it is rigging No. 85 and has a derrick up for No. 104 in the same lot. In Lot 3 its No. 97 is in gray lime at 2,293 feet, and No. 84 is drilling in shale at 190 feet. Transcontinental Petroleum Co.'s operations in Lot 4 follow:

No. 145 cemented 12½-inch in shale at 600 feet; No. 159 has cemented 10-inch in the San Felipe at 1,300 feet. In Lot 5 its No. 149 cemented 10-inch at 1,250 feet in the San Felipe; No. 136 is drilling in lime at 2,055 feet; No. 161 is running 10-inch in the Sa Felipe at 1,215 feet, with hole full of oil. In Paciencia, north of Cacalilao, Transcontinental's No. 16 has spudded and is making hole at a nominal depth; and it is rigging up for three other tests here.

Panuco

In the older sectors of the Panuco Fields operations are as follows: Credito Petrolero's No. 4, Lot 15 Lomas y Llanos is drilling in the San Felipe at 2,064 feet. East Coast Oil Co.'s No. 22 Laguna de la Milpa is drilling in white lime at 2,115 feet. Mexican Sinclair Petro'eum Corp's No. 6 Tanantuco cemented 10-inch in gray lime at 1,200 feet, and its No. 4, Lot 6 Camolote is spudding. National Lines No. 21 San Manuel, a Federal zone test, cemented 8-inch in gray lime at 1,142 feet. Transcontinental Petroleum Co.'s No. 18 Barbarena is showing some 25 bbls. of fluid at 1,760 feet.

South Fields

The next completion scheduled for the south fields is Huasteca Petroleum Co.'s (Mexican Petro'eum), No. 50 Cerro Azul, which, drilling at 1,625 feet in the Tamasopa, is expected in any screw now. This is the test in which the Tamasopa lime was encountered by the drill at a sub-sea level of 818 feet, marking it the shallowest Tamasopa yet encountered by the drill in the entire Cerro Azul Pool, which is saying much as all of the wells finished in the pay there thus far have been shallow ones, other south fields sectors considered, with the single exception of Toteco, which lies just north of Cerro Azul. Huasteca's No. 49 Cerro Azul is dril'ing in sandy gray lime with traces of pyrites of iron at 1,987 feet; its No. 53 is in hard gray shale at 2,010 feet; its No. 54-A is in brown shale at 1,405 feet, and three location are rigging.

In Tierra Blanca, Huasteca's No. 24 is in gray shale at 1,790 feet, and it is making ready five more locations to drill. In Chapopote Nunez, to the east of Tierra Blanca, its No. 8 is in brown shale at 705 feet; its No. 9 is in gray shale at 2,157 feet. Up in Granadilla, its No. 1 is drilling in sticky gray shale at 2,524 feet. Mexican Eagle Oil Co.'s No. 24, Lot 132 Amatlan, which has had a lot of trouble with fishing job, etc., is under way again, the drill being 4,354 feet in brown lime (Tamasopa.) This is the "deep test" for the Amatlan country. Its No. 43, Lot 260 is drilling in Tamasopa at 1,855 feet; it is rigging No. 44, Lot 125 Amatlan, and in south Amatlan its No. 27, Lot 198 is drilling in a dark gray rock at 471 feet. In Lot 121 Chinampa, its No. 42 is drilling in shale and shell at 1,005 feet; its No. 6, Lot 161 Chinampa is in gray shale at 575 feet.

Down in Mecapepec, north of Furbero, its No. 2 is in hard shale with sandstone layers at 1,708 feet. Norris and others' No. 1, Lot 161 Amatlan is in gray lime now at 2,178 feet. Penn Mex Fuel Co.'s No. 13-A Jardin is spudding, and it is back on its No. 2 La Pita way west of Alamo, redrilling the hole that has caved up following a period of standing idle. This La Pita will prove an interesting wildcat. Cortez Oil Corp.'s No. 8 Aguada is fishing for a 4-inch drill stem at 3,900 feet, and its No. 11, same, is drilling in gray shale at 2,609 feet.

Ebano

In the northern fields, Ebano's operations follow: In the La Dicha sector, No. 39 is in lime at 1,915 feet; No. 49 is in lime at 2,154 feet; No. 51 is 1,796 feet and No. 52 is 2,205 feet. In the Chapacao sector, its No. 9 cemented 8-inch in the San Felipe limes at 1,225 feet; No. 12 is in blue lime at 1,715 feet; No. 16 is in the San Felipe at 1,315 feet and No. 18 is in gray shale at 382 feet. Its La Margaritas test is drilling in a hard gray lime at 2,260 feet, with the hole full. North of the Tamesi River, its No. 1 Tancasneque is drilling in hard brown lime (Tamasopa) at 3,220 feet.

Corcovado

Corcovado continues in the dry-as-dust column at this writing but at least one test has a showing of oil. This is La Corona Petroleum Co.'s No. 3, Lot 11, (Hick's fraction), which, with 8-inch cemented at 1,310 feet in the San Felipe lime has 60 feet of oil standing in the hole. La Corona's No. 2, Lot 6 is fishing in the San Felipe at 1,900 feet, and its No. 4, Lot 7 has cemented 8-inch in gray lime at 1,455 feet. Corcovado Petro'eum Co.'s three tests, Nos. 1, 3 and 5, continue to wait for cement to set around 8-inch as last reported. International Petroleum Co.'s No. 5, Lot 6 cemented 8-inch in shell at 1,200 feet. Mexican Gulf Oil Co.'s No. 2 Lot C, is in white lime at 2,082 feet; its No. 5 Lot 4 is in gray lime at 1,476 feet; No. 7 is testing cemented 8-inch at 1,249 feet, and

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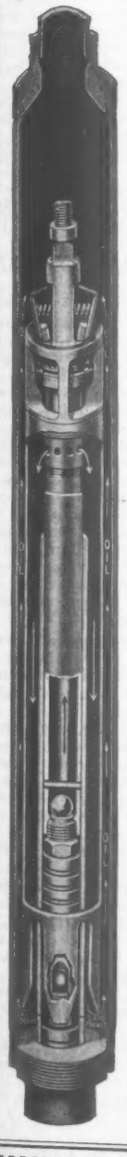

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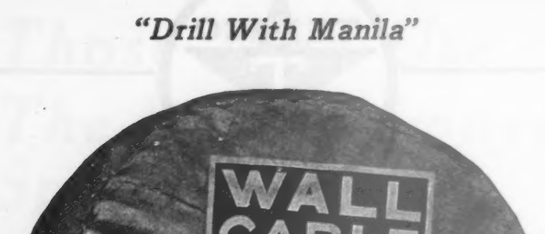

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two more tests are rigging Rich Mex Oil Co.'s No. 3, Lot B Corcovado is drilling in gray shale at 1,210 feet. Agwi Co.'s No. 2, Lot G, is in shale and shell at 990 feet.

Miscellaneous

At Los Esteros, American International Fuel Co.'s No. 16 has cemented 10-inch in gray lime at 1,425 feet, with the test spraying some little oil.

At Topila, J. E. Carpenter's No. 1 Ramirez is fishing in shale at 640 feet. Credito Petrolero's No. 15, Lot 10 Pac. de Aguacate is rigging. Cortez Oil Corp.'s No. 1, Lot 8 Cahuayotes, south of Topila proper is drilling in the San Felipe at 3,030 feet. Mexican Fuel Co.'s No. 16 Santa Fe is drilling in pink lime at 2,200 feet, and its No. 18 is drilling in shale at 810 feet East Coast Oil Co.'s No. 506-A, Lot 29, is drilling in gray shale and shell at 1,636 feet.

In the Marland Field, Cia. Petroleum, Franco Espanola, No. 19 Limon, is drilling in gray shale with limestone streaks at 1,696 feet; its No. 21 is fishing a 10-inch bit at 1,965 feet in gray lime, and No. 22 is drilling in shale at 825 feet.

At El Naranjo, northwest of Elbano, International Petroleum Co.'s No. 1 is drilling at 2,120 feet in the San Felipe.

In the Tortuga, Morrison's No. 14 (Meade) is drilling in a heaving, dessicated asphalt at 2,278 feet, a peculiar and interesting phenomena. Whether there is a big gas pocket underneath this stuff, which is hard to clean out and worse to drill in, or whether there is hydrostatic pressure making it perform, or the real oil body, remains to be seen. The odds are even with no takers on either end of the table nor the middle. The No. 4 there (Reitan) is drilling in the San Felipe at 2,150 feet, and the No. 12 (Henry) is drilling in gray shale at 1,310 feet.

At El Barco, Mexican Gulf Oil Co.'s No. 24 has tested cement at 1,249 feet, and is resuming. Its No. 51 is drilling in shale at 225 feet, and No. 64 is in lime at 1,204 feet.

In its right-of-way in the Chapacao sector, National Lines' No. 5 is in gray lime at 2,015 feet, and its No. 9 is in shale at 755 feet. The status of its other tests in this sector is unchanged.

Modelo Vincent, drilling No. 1 Casa Piedra, just north of Tampico proper, has shut off near-surface water, which was making trouble, and the drill is now in blue shale at near 400 feet.

Over in San Luis Potosi, Mexican Eagle Oil Co. is going back to its old No. 1 San Pedro, which is drilled to 4,000 feet back in 1912-13. The drill stopped then in a massive limestone, and it was rated good for say 15 bbls. a day of 48 degree oil. The company plans now to go into the hole with a diamond drill and core it deeper for geological purposes.

GULF COAST

(Continued from Page 48)

Oil Co. is offsetting with No. 2 Hawkins, drilling around 700 feet.

At Boling Dome in Wharton County, the Gulf Production Co.'s No. 2 Cloud is at 1,435 feet. No. 3 Felder is around 2,180 feet. The Humble Oil & Refining Co. is drilling No. 10, a formation test, off the dome.

At High Island, in Galveston County, the Gulf Co.'s No. 2 Smith is at 2,485 feet.

In south Louisiana, T. F. Denman is rigging No. 1 Chappins in Acadia Parish and the Pure Oil Co.'s No. 1 Sweet Lake Land Co. is in Cameron Parish.

Southwest Fields

Little of importance transpired in the Southwest territory during the week, either in the fields or among the wildcats. In the Luling Field, Armstrong and Deiterer's No. 1 McKean on the Guadalupe County side of the San Marcos River, is good for 250 bbls. The United North & South Oil Co., Magnolia Petroleum Co., Grayburg Oil Co., Rio Bravo Oil Co. and other operators there have cut operations to the bone. The United North & South Co. is trying for an extension to the north and northeast with deep tests. It is said another structure has been located near Lockhart and the United North & South Co. has started a test there. On the Caldwell County side, that company is drilling No. 9 Trammel and the Echols Carter Drilling Co. No. 2 and 3 Fields.

The Stebbins Oil & Gas Co. has started No. 1 Stebbins in the western part of Guadalupe County. The Navadad-Clear Creek Oil Co. is starting southwest of Weimar, Fayette County. In Wilson County, Douglass & Thomas' No. 1 Kotzer is drilling and in Uvalde County, the Humble Oil & Refining Co. rigged No. 2 Kincaid.

In Jim Wells County, the Simms Oil Co. is setting casing in No. 1 Wood at 2,765 feet. It shows for a gasser. In Live Oak County, the Houston Oil Co. is deepening No. 4 Cartwright from 1,900 to 2,100 feet. It is in a gas sand. No. 6 Cartwright is drilling in and No. 7 is rated as a 40,000,000-foot gasser. The gas belt in Live Oak, Jom Wells and San Patricio counties covers approximately 8 miles from east to west and 5 miles from southeast to northwest. The Texas Co. is drilling No. 2 Reagan and the Southern Natural Gas Co. No. 9.

Laredo Districts

The Swiftsure Petroleum Co. (Mills Bennett and associates) is setting casing in No. 1 in the Aviator Pool. The National Oil & Refining Co. set and cemented casing in No. 1 in the Caroline-Tex gas region. Morgan-Gibble Co.'s No. 3 there is drilling. The United States Oil & Gas Co. has spudded in No. 1 there.

N. LOUISIANA-ARKANSAS

(Continued from Page 42)

rig up for No. 2 Green and are drilling at 2,270 feet in No. 3, Section 23-15-17. The Simms Oil Co. has rig up for No. E-3 Berg, Section 30-15-15.

J. S. Smith tested 50 feet of oil in No. B-2 Shirey at 2,290 feet in 1 foot of sand and will drill deeper, Section 36-15-17. The Standard Oil Co. has set 6-inch casing at 1,920 feet in No. 1 Alphin, Section 2-16-15. Staples and associates have set 6-inch casing at 2,160 feet in No. 4 Smith, Section 36-15-17.

The Sun Co. has derrick pattern on location for No. 4 Hardin, Section 27-15-16. The Texas Co. is waiting on standard rig to pump Nos. 3 and 4 Reynolds; with 10-inch casing set in Nos. 5 and 6, Section 23-15-17.

Timberlake and associates have set 10-inch casing at 60 feet in No. 1 Green, Section 23-15-17. Whittiken and others have rig up for No. 5 Anderson, in Section 23-15-17.

Considerable activity is under way in the Cotton Valley district. The Alabama Petroleum Co. is building derrick for No. 1 Coffee, Section 19-21-9. The Crusader Pipe Line Co. is bailing to test No. B-6 Hope estate at 2,520 feet in 27 feet of sand, Section 13-21-10. On the same lease it set 10-inch casing at 455 feet in No. B-7 and at 445 feet in No. B-8, and is down 100 feet in No. B-9, Section 24-21-10. In Section 13-21-10 it has derrick up for No. B-10; is rigging up No. B-11; derrick built for Nos. B-12 and B-14, and is rigging up to drill No. B-13, in Section 24-21-10.

The Fortuna Oil Co. is drilling in lime rock at 2,200 feet in No. 2 W. Cox, Section 15-21-10. The Humble Oil & Refining Co. is drilling lime at 1,605 feet in No. B-11 Bodcau, Section 13-21-10 and has set 10-inch casing at 470 feet in No. B-12, Section 24-21-10. It is waiting for standard rig to pump No. 4 Davis at 2,510 feet, Section 13-21-10; drilling lime at 1,950 feet in No. 1 Gray and set 10-inch casing at 470 feet in No. 2, Section 26-21-10. In Section 14-21-10, it set 10-inch casing and drilled to 850 feet in No. 4 S. S. Merritt and in Section 34-21-10 on the J. Moore lease, it has 10-inch casing set at 430 feet in their first well.

The Louisiana Oil Refining Corp. has set 10-inch casing at 425 feet in No. 1 Bodcau, Section 13-21-10, and in Section 22-21-10 it set 6-inch casing and drilled to 2,530 feet in No. 3 Lindsay. Moffatt & Murphy have derrick pattern on location for their first well on the Miller lease, Section 28-21-10.

The Ohio Oil Co. is drilling gumbo at 1,590 feet in No. 15 Bodcau, Section 28-21-10; has set 10-inch casing at 450 feet in No. 16, Section 13-21-10, and down 390 feet in No. 17, same section. In Section 27-21-10, it is rigging up No. 1 Gray, and in Section 16-21-10 it set 6-inch casing at 2,470 feet in its first well on the Harris lease.

The Ruston Drilling Co. has derrick built for a well on the Cox lease, in Section 15-21-10.

In the Springhill district, Belchic & Laskey are down 2,540 feet in No. 1 Martin, Section 34-23-10. The Fortuna Oil Co. has set 8-inch casing at 800 feet and they are drilling plug, Section 33-23-10.

Bienville Parish

The Roxana Petroleum Corp. is drilling No. 1 Bryan at 2,270 feet, Section 30-17-16, 20 miles south of the Homer Field, between Gibsland and Bienville.

Bossier Parish

The Arkansas Natural Gas Co. is rigging up to drill No. 1 Bolinger, Section 32-23-11. Coker and associates have shut down No. 1 Rhodes at 60 feet, Section 31-21-11, 7 miles west of the Cotton Valley Field.

The Palmer Corp. has set 6-inch casing at 1,885 feet in No. B-7 Hodges, Section 30-16-11.

G. W. Weatherbee has set 8-inch casing at 810 feet in No. 1 Holland, Section 4-22-11.

Bellevue Field

G. W. Weatherbee has set 6-inch casing at 350 feet in No. B-15 Bliss & Weatherbee, Section 15-19-11.

Caddo Parish

In the Pine Island district, the Dixie Oil Co. is waiting for standard rig to pump No. 4 Louisiana State at 1,635 feet, Section 13-21-15 and is reaming to bottom of No. B-1 W. B. & L. L. Noel, at 3,290 feet, Section 24-21-15.

The Fortuna Oil Co. is down 3,135 feet in No. 10 Robertshaw, a deep test, in Section 23-21-15. The Texas Co. is arranging to drill No. 43 Caddo Mineral Lands Co. deeper from 2,950 feet in Section 23-21-15. The well was completed in November, 1924, flowing 1,000 bbls. The Tholl Oil Co. is down 200 feet in No. 9 Bashara, Section 23-21-15.

In the Waskom district, Glassell & Myer's No. 1 Florsheim is blowing 10,000,000 feet of gas at 1,475 feet, Section 9-17-16, derrick blown down.

In the Caddo Lake district, W. M. Gross and associates are rigging up to drill their second well on the H. Rives and others' estate, Section 5-20-16. The Gulf Refining Co. has set 10-inch casing at 175 feet in No. 221 Ferry Lake, Section 21-20-16. The Texas Co. is reaming No. 1 Federal Jeems Bayou at 3,500 feet, Section 15-20-16.

Haynes Brothers have set 10-inch casing at 1,185 feet in their test on the Louisiana Live Stock & Planting Co. lease, Section 8-19-16, 5 miles southwest of Mooringsport.

The Proven Production Co. has gone into No. 1 Augurs which struck salt water last October and is setting 6-inch casing with packer at 1,780 feet, Section 6-16-16.

R. T. Smith, trustee, has shut down No. 1 Pitts at 580 feet, Section 11-23-16. The Texas Co. is rigging up to drill No. 3 Herron Land Co., Section 8-15-12.

Caldwell Parish

Culver and associates are arranging to resume drilling at 3,130 feet in No. 1 fee, Section 21-14-4e.

Claiborne Parish

Clark & Melat are rigging up to drill No. 1 Morman, Section 5-21-16. The El Dorado Chief Oil Co. is down 2,740 feet in No. 1 McElwee, Section 13-22-7, 7 miles northeast of Homer.

J. P. Evans and associates have a show of gas at 2,593 feet and are arranging to set 6-inch casing in No. 1 Taylor, Section 5-19-5, 10 miles southeast of Homer.

De Soto Parish

The Texas Co. has set 12½-inch casing at 20 feet in No. 30 Christine, Section 6-12-11. L. V. Ulrey is drilling gumbo at 2,430 feet in No. 1 Patterson-Robinson, Section 22-11-12, 3 miles north of Pelican.

La Salle Parish

The Gulf Refining Co. is drilling gumbo at 1,320 feet in No. A-1 Urania, Section 22-11-2e, 5 miles east of Urania. The Stovall Drilling Co. is down 1,670 feet in No. 2 Louisiana Central Lumber Co., Section 27-20-2e, 4 miles southeast of Urania.

The Urania Petroleum Co. is drilling at 1,510 feet in No. 5 Urania, Section 18-10-2e.

Morehouse Parish

The Natural Gas Production Co. is down 1,750 feet in No. 14 Crossett, Section 19-22-5. The Oil Fields Exploration Co. is drilling at 2,250 feet in No. 1 Pratt, Section 35-20-5e.

Ouachita Parish

Dickson & Frue are drilling at 2,190 feet in No. 1 Goodwin, Section 24-18-2e. Ladell and others set 8-inch casing at 910 feet in No. 32 fee, Section 10-19-5e.

Montgomery and associates are drilling at 885 feet in No. 1 McHenry, Section 12-19-4e. The Palmer Corp. has derrick up for No. 1 Central, Section 1-19-4e.

The Southern Carbon Co. is down 2,160 feet in No. 43 fee, Section 31-19-5e, and in Section 7-19-5e they are drilling at 1,670 feet in No. 44 and have derrick built for No. 45.

J. P. White and associates have shut down No. 1 Jones at 930 feet in Section 6-16-5e.

Red River Parish

Tarver and associates are drilling gas rock at 1,180 feet in No. 1 Conley, Section 2-14-10.

Sabine Parish

L. M. Emlet has shut down No. 4 Bowman Hicks Lumber Co. at 1,109 feet and is drilling No. 5 at 1,375 feet in shale, Section 8-7-12.

Union Parish

Jones Walker Oil Co. has set 6-inch casing at 2,520 feet in No. 1 Feazel, Section 6-19-2e, between Monroe and Farmerville. The Simms Oil Co. is drilling at 955 feet in No. 1 James, Section 16-22-3w.

Winn Parish

J. R. Hall is down 300 feet in No. 1 E. Eagles, Section, 6-10-2w.

Bradley County, Arkansas

Rhodes and associates have shut down No. 1 McTwiston at 100 feet, Section 36-12-9.

Columbia County

The Arkansas Fuel Oil Co. struck a fresh water flow at 667 feet while setting 10-inch in No. 1 W. E. Hardy, Section 1-19-22.

The Kentucky Arkansas Petroleum Co. is drilling shale at 600 feet in No. 1 Peter Doss, Section 29-19-20. The Magnolia Development Co. has set 10-inch casing at 80 feet in No. 1 Phil Lindsay, Section 30-18-19.

The Magnolia Petroleum Co. is fishing at 2,800 feet in No. 2 Watson, Section 36-15-20, in the Stephens Field. Smith & Compton have shut down No. 1 Duffer at 2,260 feet, Section 35-18-19.

Drew County

Rhodes and associates are drilling at 1,900 feet in No. 2 Harris, Section 5-13-8.

Lafayette County

The Kensaw Petroleum Co. is drilling shale at 1,320 feet in No. 2 Red River Land Co., Section 3-20-24.

Lincoln County

Cambrian and associates are drilling shale and gumbo at 2,855 feet in No. 1 fee, Section 3-9-8.

Miller County

Dr. F. F. Nigh and associates are drilling at 1,220 feet in No. 1 Thomas, Section 12-20-28.

Nevada County

The Autrey Oil Co. is rigging up to drill No. 3 Womack, in Section 10-14-21. Ames and others are building derrick for No. 2 Womack, Section 10-14-21. The Humble Oil & Refining Co. has derrick up for No. 1 J. D. Pitt, Section 8-15-22.

Greason and associates are drilling at 1,075 feet in No. 1 McKinney, Section 10-14-21.

The Ouachita Valley Oil Co. has temporarily abandoned No. 1 Phillips, Section 30-14-20.

Zing and others have shut down No. 1 Graves at 1,605 feet, Section 22-10-23 and are rigging up to drill No. 1 McKinney, Section 10-14-21.

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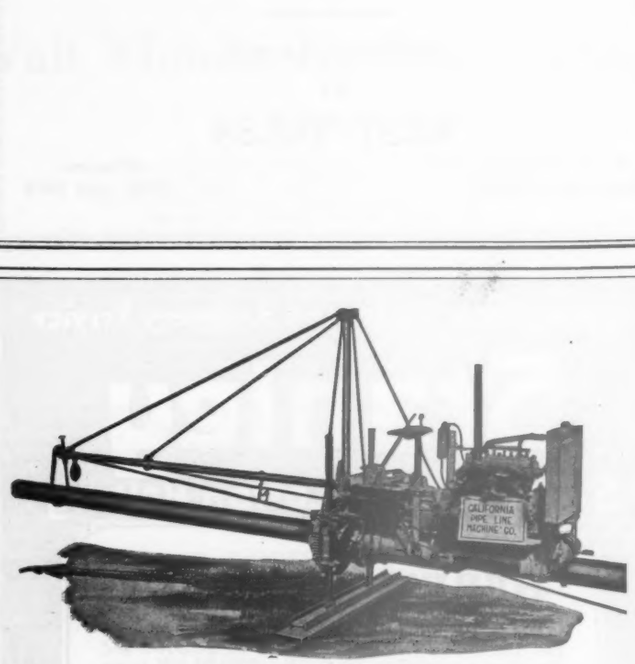

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(Continued from Page 45)

identified and a fair estimate made for the future, a large number of operators would decide simultaneously to deepen and once again the estimates were worthless. This happened with such regularity that it made the most exacting estimates look ridiculous. Joseph Jensen, chief geologist of the Associated Oil Co. and a corps of experts estimated that the daily production at Long Beach during December, 1924, would be approximately 31,000 bbls. The actual output during this month was 125,600 bbls. The peak of production was reached in October, 1923, with a daily average output of 244,527 bbls. The field produced a total of 75,588 bbls. in 1921; 18,560,595 bbls. in 1922; 68,810,361 bbls. in 1923; and 60,122,002 bbls. in 1924. The 525 wells producing during December, 1924, averaged 239 bbls. each per day, as compared with a high of 985 bbls. per well in June, 1923.

Development at Torrance

The first well was actually put on production in the Torrance Field durig May, 1922, although the Chanslor-Canfield Midway Oil Co. had spent several months previous to this time trying to secure production in No. 1 Del Amo. The discovery well is located in the Redondo, or Torrance section, as distinguished from the Lomita area, and the original oil was of a very low quality, the gravity being 13.1 degrees. This heavy oil, together with a troublesome sand, held up the first production for some months. The existence of a field, however, was recognized late in 1921, and although actual commercial production had not yet been secured, several additional holes were started. For a long time, Torrance seemed destined to be a comparatively small field. Development work gradually moved towards Lomita and this area really made the Torrance Field. The more prolific sand in this vicinity was directly responsible for the rapid rise in production and is the most important factor in maintaining the present steady output. The average daily well production in this field never reached any very high figure. The highest daily production was 517 bbls. per well in December, 1923, and the lowest 88 bbls. per well in December, 1924.

Future of Dominguez

Dominguez is at present enjoying a rapid development and corresponding fast rise in production. It has not yet reached the production peak and because of the limited amount of prospecting done, no reliable estimate can be ventured as to the maximum daily output. The field's future depends upon the requirements principally of the Union and Shell Oil Cos. Except for one little area, only a normal amount of drilling is being done by these two concerns. In the center of the field a gentlemen's agreement binds the Union and Shell to a minimum penetration in the oil sands and prevents the drilling of a deep test until a more opportune time. Deep holes around the outside of the present producing area lead many to believe that there is a deep zone around 5,200 feet. The highest daily well production listed to date was in December, 1924, when the 38 wells producing at that time averaged 1,393 bbls. each. The lowest daily well production occurred in February, 1924, the three wells producing at that time averaging 481 bbls. each.

Rosecrams has so far failed to exhibit any threatening symptoms of developing into a gusher field, although a deep sand in the center of the field may yet be discovered. With but one or two exceptions, all wells finished to date have fallen off miserably. The greater part of the field, with the exception of a town lot area of undetermined expanse in the northwest, is held by the Union and Barnsdall Oil Cos. These two concerns are wisely pursuing a moderate drilling campaign. Inglewood is still in its infancy and, since only a few shallow holes have been drilled in the field itself, no estimate can be made as to what the future holds in store. In the upper zone around 2,000 feet we may expect wells good for an average of at least 100 bbls. each.

Because of the shallow depth at which production is secured, wells can be drilled quite speedily and, considering this factor, a fair production should be developed late in 1925 or early in 1926. The Standard opened up this new district by getting oil in well No. 1 on Los Angeles Investment Lease No. 1. The company paid the Los Angeles Investment Co., a realty concern a $500,000 bonus for an additional 1,000-acre lease, but recent developments indicate that the last acquisition will not be productive. Another large lease was later secured from Clara Baldwin Stocker upon payment of a substantial bonus, but this property has not yet been thoroughly tested. The company's most recent acquisition is the Vickers' lease, upon which a small pumper has just been finished. The second and most successful completion in the field was the Mohawk Oil Co.'s No. 1 Machado, which came in doing 200 bbls. a day. The most recent completion is the Pan American's No. 1 Sentous, a small pumper from 1,882 feet. In addition to the Standard, Pan-American and Mohawk, several other concerns have secured acreage, but it is as yet unproven.

California's Next Field

California's next oil field will be at Seal Beach, if any development work is done in that area, but so far the company having the property tied up is satisfied to let this natural reservoir alone until conditions improve and prices are better. The Union has probably been the most agressive of any of the California companies and its success in the past five years in opening up new fields has been a matter of nation-wide interest. This company, not satisfied with its achievements in California, went over into Colorado and developed production there. Wyoming and Texas also came in for a share of the company's work, but this has so far been of a minor nature. The company finished 45 new wells in California during the past 12 months, good for 35,000 bbls. of new production.

Rosecrans and Dominguez were the recipients of most of the Union's endeavors, although Santa Fe Springs, Huntington and Long Beach, also figured quite prominently in the company's work. The greater part of the new production added was at Domingues, the wells in this field yielding approximately 25,000 bbls. a day in the aggregate upon completion.

The Shell has inaugurated a rather comprehensive wildcatting program extending from one end of the State to the other. It has only been within the last few years that the Shell became a state-wide institution and its growth is nothing short of marvelous. This concern's chief bid for recognition is its work at Long Beach, of which it was the discoverer. The Shell was not content with this achievement and later started a couple of wildcats down Seal Beach way. The company's success here is a matter of record, for, as stated above, this will be California's next field if any new drilling is done on top of the hill. The Shell is making an excellent reputation at Dominguez for efficient drilling and, while its efforts in this field will probably not surpass the work done at Long Beach, it is nevertheless being rewarded with increased production.

The Shell is well established in all of the principal fields in Southern California and the familiar yellow and red service station is becoming quite popular in all points on the Pacific Coast. With the exception of the Standard, the Shell finished more new wells in California than any other single company. The Standard brought in 150 new producers good for 45,000 bbls. a day, while the Shell finished 124 new wells good for 95,000 bbls. initial daily output. Dominguez, Long Beach and Torrance were the principal contributors to the Shell's total of new wells.

Standard's Work in 1924

The Standard Oil Co. experienced a favorable growth during the year but was not successful in securing any proven land in either the Dominguez or Rose-

crans districts. It was, however, rewarded with a new, but small, field at Inglewood, which may, of course, develop into a first class producing area with additional drilling. The company did not push work at Wheeler Ridge because of the heavy output at other points and consequently the field is still in the early stages of development. Prospecting was continued, however, with the result that a hitherto unknown deep sand was picked up and commercial production developed. The company also did some new work at Coyote and opened up a deep sand in this area. The Standard is still by far the biggest factor on the Pacific Coast, its pipe line runs and sales exceeding those of any other company. It is the largest buyer of crude in the State at present and its purchases in the Long Beach Field alone exceed the entire purchases of several other concerns. This company is the dominating factor in California and its policies are accepted and followed by practically all others.

Strange as it may seem, Torrance was the scene of the Standard's principal work during 1924, judging by the number of new wells finished. The company's operations at Inglewood, Montebello and Coyote, however, are of more economic value, since the company increased its potential supply of crude by new discoveries and deeper drilling, which resulted in the opening up of deep sands for development. The Standard will undoubtedly do considerable drilling at Huntington Beach during 1925, if conditions warrant.

The Pan-American continued its growth and rounded out a very successful year by entering the retail service station trade in Southern California. A substantial fuel oil business has been developed and the company is formulating plans to extend both its fuel and refined oil sales to all parts of the State. Many improvements were made in pipe line and marketing facilities during the year just closed. The Associated did not make as big a showing in 1924 as it did in 1923 but nevertheless occupies a very important position in the State. This company's work in 1923 in constructing pipe lines, docking facilities and storage tanks in Southern California was very prominent.

General Petroleum Co.

The General Petroleum appears to have reached its maximum under present conditions and is waiting for better times in order to realize on its present inventories. This is a characteristic common to nearly all California companies—the reluctance to sell any great quantity of fuel or refined oils at present. The General Petroleum has plenty of production, in fact, the company has about 10,000 bbls. a day shut in. The company's policy, until recently, was a conservative one but now it is beginning to do some wildcatting and may be successful some time in adding a new field to California's already large list. The Pan-American, under the able direction of J. C. Anderson, finished a very prosperous year and stockholders can look back upon the past 12 months with satisfaction. The company is expanding and increasing its facilities as needed. A good fuel and refined oil market has been established and it is expected that a better than normal gain will be made during the coming year.

The Marland Oil Co. of California, took advantage of the Dominguez and Rosecrans Fields, and by good drilling has built up a production of about 3,800 bbls. a day. When its acreage in these two fields has been drilled up, the company will probably have to resort to wildcatting or extension work to develop additional production.

Rosecrans Crude Production 1924

1924—	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
May	18,601	606	1	606
June	21,225	708	1	708
July	20,631	666	1	666
August	35,454	1,143	2	572
September	77,915	2,597	5	519
October	71,366	2,302	9	256
November	129,255	4,309	15	287
December	236,785	7,638	17	449
Total	611,432	2,495		

Torrance Crude Production, 1922-1924, Inclusive

	Production Monthly	Production Daily	No. of Wells Prod.	Daily Prod. Per Well
1923—				
January	.....	.....	...	.....
February	.....	.....	...	.....
March	.....	.....	...	.....
April	.....	.....	...	.....
May	3,941	127	1	127
June	9,176	306	2	153
July	13,962	450	4	113
August	5754	186	3	62
September	15,715	524	5	105
October	33,727	1,088	10	109
November	41,050	1,368	8	171
December	67,460	2,176	13	167
Total	190,785	778		.....
1923—				
January	84,831	2,736	12	228
February	77,328	2,762	15	184
March	96,075	3,099	14	221
April	97,213	3,240	15	216
May	108,030	3,485	31	166
June	141,787	4,726	25	189
July	139,954	4,515	33	137
August	183,086	5,906	28	211
September	222,502	7,417	33	225
October	394,395	12,722	46	277
November	610,031	20,334	66	308
December	973,472	31,402	99	317
Total	3,128,694	8,572		.....
1924—				
January	972,261	31,363	139	226
February	800,311	27,597	160	172
March	1,168,181	37,682	229	165
April	1,644,023	54,801	266	206
May	1,783,670	57,538	335	172
June	1,716,885	57,229	362	158
July	1,776,550	57,308	419	137
August	1,741,121	56,165	437	129
September	1,629,453	54,315	451	120
October	1,532,867	49,447	487	102
November	1,367,586	45,586	482	95
December	1,393,215	44,942	510	88
Total	17,526,123	47,886		
Total to date	20,845,602	21,358		

Torrance Development Work

	Comp. No.	Comp. Output	Wells Drg.	Wells Prod.	Wells Abd.	New Rigs
1921—						
January	...	.....	...	...	...	...
February	...	.....	1	...	...	1
March	...	.....	1	...	...	...
April	...	.....	1	...	...	...
May	...	.....	1	...	...	...
June	...	.....	1	...	...	...
July	...	.....	1	...	...	...
August	...	.....	2	...	...	1
September	...	.....	2	...	...	...
October	...	.....	2	...	...	1
November	...	.....	3	...	...	...
December	...	.....	3	...	...	1
Total	...	.....				4
1922						
January	...	.....	5	...	...	1
February	...	.....	6	...	...	1
March	...	.....	6	...	...	...
April	...	.....	6	...	...	...
May	1	139	6	1	...	...
June	1	324	5	2	...	5
July	2	846	7	4	...	1
August	...	.....	8	3	...	5
September	2	350	12	5	...	4
October	4	769	10	10	...	2
November	...	.....	14	8	...	5
December	5	1,809	10	13	...	1
Total	15	4,237				25
1923—						
January	...	.....	15	12	...	8
February	2	235	17	15	...	7
March	...	.....	23	14	...	4
April	2	530	27	15	...	7
May	6	1,743	24	21	...	6
June	6	1,087	28	25	...	9
July	6	2,350	22	32	...	13
August	...	.....	35	28	...	20
September	4	3,747	61	33	...	31
October	12	9,135	82	46	...	51
November	23	23,857	110	66	...	56
December	41	30,972	120	99	...	72
Total	102	73,656				284
1924—						
January	43	15,422	150	139	6	87
February	32	7,451	172	160	1	41
March	75	39,605	153	229	1	66
April	54	22,550	143	266	...	43
May	78	27,035	106	335	4	34
June	35	10,174	114	362	2	51
July	62	17,304	97	419	3	52
August	44	10,018	72	437	1	22
September	38	9,032	57	451	2	17
October	36	5,286	45	487	4	17
November	14	2,268	41	482	...	7
December	20	3,254	31	510	6	13
Total	531	169,399			30	450
Total to date	648	247,292			30	763

STOCKS AT REFINERIES

The following is the American Petroleum Institute's summary of the increases or decreases of stocks at refineries covering approximately 62 per cent of the operating capacity of the United States for the month of December:

	Bbls. of 42 Gals. Increase	Bbls. of 42 Gals. Decrease
Foreign crude oil	179,050	.....
Domestic crude oil	993,224	.....
Oil for re-running	.....	209,750
Gasoline	382,423	.....
Kerosene	.....	260,422
Gas and fuel oil	.....	580,609
Lubricating	214,690	.....
Miscellaneous oils	700,102	.....
Total	2,469,489	1,050,781
Deduct	1,050,781	
Net increase	1,418,708	

Note: East of the Rockies there was an indicated increase in gasoline of 231,708 bbls. and west of the Rockies an indicated increase of 150,715 bbls., making a net increase of 382,423 bbls. for the refineries reporting.

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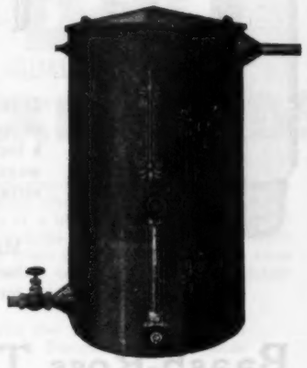

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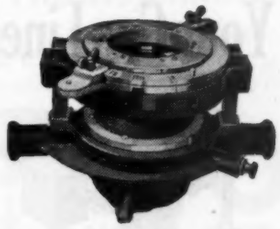

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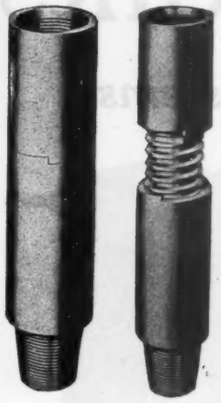

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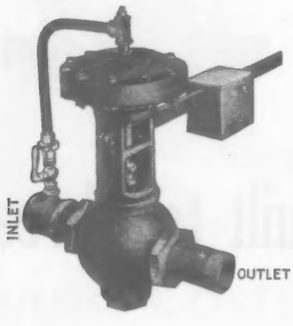

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OKLAHOMA, KANSAS AND NORTH CENTRAL TEXAS IN DECEMBER

Oklahoma production in December fell off 14.719 bbls. a day in December as compared with the November production. The output in December was 517.135 bbls. per day and that of November 531,854 bbls. per day. The very cold weather of the last third of the month was partly responsible for the decline.

The North and Central Texas Field produced an average of 126.195 bbls. of which North Texas produced 81,765 bbls. and Central Texas and Panhandle produced 44.430 bbls. a day. The total varied little from that of November.

The East Central Texas area, which includes Mexia, Powell, Wortham, Richland and Currie produced an average of 125,628 bbls. a day, as against 113.950 bbls. a day in November. The influence of Wortham was felt for the first time in December, that field averaging 28,818 bbls. a day.

Kansas fell off 4,629 bbls. a day and averaged 81.853 bbls. a day as against 86.582 bbls. a day in November. The cold weather had considerable to do with the decline.

Following are the figures for the several divisions:

Oklahoma

Daily average and monthly production in December, 1924:

	Daily Av.	Monthly Prod.
Washington County	5,885	182,435
Nowata-Rogers Counties	5,411	167,741
Burbank	68,212	2,126,972
Osage, outside of Burbank	38,967	1,207,977
Bird Creek, Owasso, etc.	4,114	127,534
Red Fork, Bruner, Sand Springs, Turkey Mountain, Fisher	3,888	120,528
Bixby, Leonard and Jenks	1,720	53,320
Broken Arrow	529	16,399
Mounds, Beggs, Hamilton Switch and Youngstown	11,714	363,134
Bald Hill	2,210	68,510
Okmulgee and Morris	3,418	105,958
Henryetta, Schulter and Tiger Flats	2,306	71,486
Muskogee and Wagoner Counties	1,611	49,941
Wewoka	11,990	371,690
Cromwell	40,872	1,267,032
Deaner-Lyons	4,912	152,272
Papoose-Gilcrease	29,947	928,357
Okemah	251	7,781
Weleetka	1,819	56,389
Wetumka	125	3,875
Cushing and Shamrock	21,642,	670,902
Glen, Sapulpa and Kiefer	8,763	271,653
Bristow, Kelleyville and Depew	32,055	993,705
Eastern Bristow	6,815	211,265
Cleveland-Keystone	4,010	124,310
Jennings	6,714	208,134
Otoe or Watchorn	8,225	301,475
Yale, Quay and Ingalls	4,716	146,196
March Pool (N. Cushing)	1,185	36,735
Stroud	3,125	96,875
Blackwell and Deer Creek	3,404	105,524
Mervine	462	14,322
Braman	2,189	67,859
Ponca City	1,010	31,310
Tonkawa	192,691	3,183,421
Thomas	255	7,905
Billings	434	13,454
Garber	4,481	138,911
Healdton	15,140	469,340
Hewitt	16,050	497,550
Fox	2,564	79,484
Breck	1,418	43,958
Graham	11,009	341,279
Tussy or Sholom Alechem	1,600	49,600
Loco-Milroy	2,361	73,191
Kilgore	187	5,797
Comanche	620	19,220
Duncan	6,914	214,334
Walters	998	30,938
Hambro (6s-5w)	492	15,252
Cement	1,865	57,815
Robberson	3,016	93,496
Sayre	160	4,960
Allen	264	8,184
Total December	517,135	16,077,685
Total November	531,854	15,955,620
Difference	14,719	122,065

Kansas

Daily average monthly production in December, 1924:

Marion County—	Daily Av.	Monthly Prod.
Florence	1,493	46,438
Peabody	2,716	84,196
Covert-Sellers	1,018	31,558
Butler—		
Elbing	3,503	108,593
Potwin	449	13,919
Cameron-Robinson	706	21,886
Wilson-Dunkle	1,991	61,721
Towanda	2,975	92,225
El Dorado	6,401	198,431
Fox-Bush	2,813	87,203
Nuttle-Koogler	1,490	46,190
Sluss	490	15,190
Blankenship	1,087	33,697
North Augusta	1,111	34,441
South Augusta	2,295	71,145
Smock	228	7,068
Douglas	160	4,960
Leon-Weaver	810	25,110
Greenwood-Woodson—		
Virgil	5,866	181,846
Seeley	4,460	138,260
Thrall-Burkett	7,378	228,718
Sallyards	1,665	51,615
Polhamus	4,614	143,034
Teeter	2,691	83,421
Miscellaneous	151	4,681
Cowley County—		
Rainbow Bend	6,690	207,390
Slick-Graham	1,017	31,527
Rock (Twp. 30-4)	573	17,763
Clark (Twp 31-3)	109	3,379
Eastman (Twps. 30-6, 31-6)	874	27,093
Winfield (Twps. 32-4, 32-5)	780	24,180
Miscellaneous	428	13,268
Other counties—		
Rice	34	1,054
Russell	1,006	31,186
Harvey	62	1,922
Chautauqua	3,511	77,542
Elk	801	24,831
Wilson	102	3,162
Montgomery	2,756	85,436
Allen	1,274	39,494
Neosho	704	21,824
Lyon	61	1,891
Miami	516	15,996
Franklin	534	16,554
Douglass	43	1,333
Bourbon	44	1,364
Linn	410	12,710
Anderson	1,572	48,732
Labette	50	1,550
Total December	81,852	2,537,443
Total November	86,582	2,597,460
Difference	4,629	60,017

North and Central Texas

Average daily and total monthly production in December, 1924:

North Texas—	Daily Av.	Monthly Prod.
Burkburnett	15,612	483,972
Electra	17,509	542,779
Iowa Park-K. M. A.	3,956	122,636
Archer County (Holliday etc.	39,115	1,212,565
Clay County	367	11,007
South Vernon	5,216	161,696
Total North Texas	81,765	2,534,715
Central Texas—		
Clear Fork	5,016	155,496
Breckenridge	8,094	250,914
Caddo	5,360	166,160
Gunsight	75	2,325
Ranger-Eastland	5,906	183,065
Rising Star	95	2,945
Sipe Springs	190	5,890
Desdemona	2,744	85,064
Pioneer	844	26,164
Brown County	847	26,257
Callahan County	1,560	48,360
Coleman County	60	1,860
Jack County	25	775
Palo Pinto County	153	4,743
Shackelford County	2,366	73,346
Mitchell County	1,504	46,624
Reagan County	8,460	262,260
Panhandle—		
Carson County	945	29,295
Hutchinson	185	5,735
Total Central Texas	44,430	1,377,330
East Central Texas—		
Mexia	20,407	632,617
Powell	60,871	1,887,001
Currie	2,430	75,330
Richland	13,043	404,332
Wortham	28,818	893,358
Total East Cent. Texas	125,628	3,894,468
Total all fields	251,823	7,806,513
Total November	240,430	7,212,900
Difference	11,393	593,613

OIL INDUSTRY TREND DEFINITELY BETTER

"The oil industry has definitely turned for the better and the bottom in crude oil prices has been passed," John J. Mitchell, president of Illinois Merchants Trust Co. and a director of The Texas Co., says. "Demand for crude oil is broad and it is being continually strengthened by the development of new uses for petroleum products. Locomotive manufacturers have perfected a new type of boiler which offers even greater economies than from oil burning equipment in the past.

"Production has recently been increased by bringing in new fields, but drilling has been so intensive that it is quite probable they will soon be exhausted and cease to be a factor. The Texas Co. is in an excellent position. Dividend requirements of approximately $20,000,000 were covered in the first 10 months of 1924 and profits since then have been satisfactory.

TOWN MAY DRILL FOR GAS

LITTLE ROCK, Ark., Jan. 24.—The town of Alma, Ark., may be the first in the oil and gas areas of this State to possess a gas well all its own. It is proposed to drill a well within the corporate limits on one of four sites offered. It is estimated the cost of a well and laying mains would be about $15,000 and the town's income would be $1,000 a month. Alma already has a sizeable income from gas production. Inside the corporate limits are 20 producing wells, owned by the W. R. Martin interests of Fort Smith and G. T. Cazort of Lamar. The town receives $15 a month from each well and $50 a month for the pipe line company. Most of the gas is piped to Fort Smith.

POSSIBLE CAUSES OF WELL DECLINE ENUMERATED BY BUREAU OF MINES

The possible causes of the decline of oil wells in the United States, with a view to suggesting methods of prolonging their yield, is one of the petroleum technology investigations being conducted by the Bureau of Mines of the Department of the Interior. The decline of individual oil wells is the immediate or direct factor in the general decline of production throughout all fields that have been discovered to date, experts point out, and will be in the decline of all future fields.

"The efficiency of the recovery of petroleum from its underground sources can be measured by the length of time during which economic production can be sustained in individual wells, or groups of wells," an official bulletin of the Bureau of Mines explains, "the object being to leave in the sand when the well is finally abandoned the least possible percentage of the original petroleum content.

"The reasons for the decline of oil wells may be grouped in two classes—those due to natural causes and those due to poor management.

Cost Reduction Past Aim.

"Since the early days of the petroleum industry improvements in methods of production have to a large extent been confined to lessening the cost of drilling wells and to reducing the cost of surface operations.

"Although well known physical laws offer a possible solution for all underground problems, yet the amount of carefully gathered data is so scarce that general deductions must be cautiously made.

"In general," the bulletin continues, "the yield of a well declines in one or both of two ways, that is, suddenly, after the initial spurt due to local relief of pressure, or with relative slowness after the production has become settled.

"In most districts the wells begin with a relatively large initial production that is followed by a rather rapid decline to a stage during which the decrease is more gradual. The initial spurt, which in many cases, represents the flowing period of a well's life, is due to a relief of the supersaturated condition of the sand. The sudden release of pressure results in a spurt of petroleum, usually in the form of an emulsion with spray, caused by the expansion of the contained gases, that lasts for a variable length of time. The duration of this period of high production depends on local conditions, such as the porosity and structure of the sand, the extent and development of the pool, the character of the oil, the rock pressure, the position of the well with reference to the center of production, to salt water, and to other conditions of less importance."

Abnormal Factors Considered

The Bureau of Mines points out that under ideal producing conditions the decline of a well would depend on only three main factors; First, the quantity of oil available; second, the rock pressure, and third, the character and porosity of the sand. Hence all efforts should aim at a proper understanding of the various conditions that complicate these main factors, govern the productivity of a well, and abnormally hasten its abandonment. The rapid decline of many wells from large producers to small pumpers, while at the same time large producers are being completed in the same vicinity, "is evidence that these abnormal factors are at work."

Nine factors are specifically enumerated by Government experts with regard to the extent and rapidity of the succeeding decline, which are classified as follows:

1. Formation of waxy sediments that obstruct the passage of oil from the sand.
2. Decline of gas pressure in the district; that is, decrease of expulsive force, due to the exhaustion of the lighter or gaseous hydrocarbons.
3. Decrease in quantity of oil draining by gravity down the dip into the area affected by a well.
4. Decrease of the oil supply within the drainage area of a well on account of nearby development or the original limits of the pool.
5. Flooding by non-encroaching salt water under low pressure.
6. Flooding of the productive formation by salt water under high pressure.
7. Flooding by fresh water from the surface or from an overlying water bearing formation.
8. Drilling of neighboring wells.
9. Poor management, such as improper casing, unwise rate and time of pumping and failure to clean.

Surface Management Improved

Many wells cease to produce at an economical rate because of poor management of the numerous mechanical details, although bureau experts explain that it is in the surface management of wells that greatest improvement has taken place since the early days of petroleum producers. "In fact," it is officially noted, "it is remarkable to consider the great variety of time and labor saving contrivances now in use as against the great dearth of information regarding underground conditions."

SINCLAIR PIPE LINE INCREASE

Sinclair Pipe Line Co. is preparing to install additional engines and pumps at its three stations south of Mexia, Tex., to Houston to increase the line's capacity from 21,000 to 25,000 bbls. a day to the Gulf. The line is running full and additional capacity should be ready in about six weeks.

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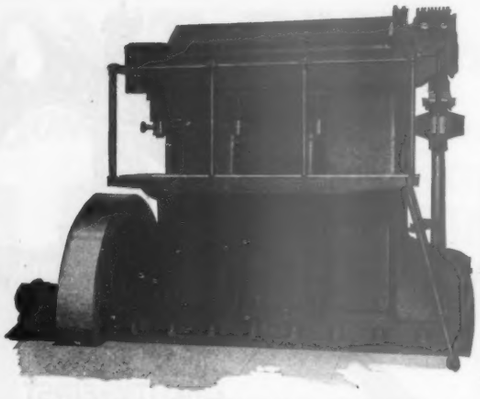

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STEEL BUYERS AWAIT DEVELOPMENTS; INCREASE IN OIL COUNTRY DEMANDS

By B. E. V. Luty

PITTSBURGH, Pa., Jan. 26.—There has been little change in iron and steel market conditions from week to week since the first of the year. The general change is between November and December on the one hand and this month on the other. There was heavy buying in those two months, with advancing prices in some lines, whereby mills entered the new year well filled with business for first quarter delivery, while consumers were correspondingly well covered. First quarter contract business applied particularly in bars and sheets, and in plates and shapes to a somewhat limited extent. In wire products 60-day contracts had been made running just about through the present month. In tubular goods there was, as usual, little contracting, this business being done more by way of placing specific orders. In tin plate the buying was chiefly for the half year, the same being true of rails.

The dominant note in the iron and steel trade now, particularly among buyers, is one of conservatism, relatively speaking, that is, for buyers took hold very freely in November and December. Now they are disposed to be content with their commitments, and await development of heavier buying in lines they sell. There are hints that some buyers made such large commitments for first quarter they would now like to string deliveries over well into the second quarter.

Good Buying in Pipe

The mills are experiencing a rather good line of buying from jobbers in merchant pipe. There is not, as there was a year ago, a disposition to make special additions to stock in anticipation of shortage in deliveries of any particular sizes. The jobbers merely wish to have a well assorted stock all around for the spring trade.

Buying of oil country goods is light, relative to the average of the year, as this is the off season, but there is noted a slight increase in buying from week to week.

Pipe mills are estimated to be running at a general average of 75 to 80 per cent, and while this is some 10 per cent below the general average of the steel industry, it represents a good operation for pipe mills at this particular season of the year. Estimates of the rate of pipe industry operation are still based on the capacity existing of late, with no allowance for the National Tube Co.'s new mill at Gary, which is not likely to be in heavy production for several months to come. As a matter of chronology, the first piece of pipe went around the mandrels at Gary on January 8, but this was merely experimental, not all the equipment being installed yet.

The steel industry as a whole, is credited with an operation of about 85 per cent. As this compares with averages of 68 per cent in 1924 and 80 per cent in 1923, there is quite a prevalent feeling that the steel industry has started the new year at rather a strong pace and doubts are naturally entertained whether the pace can be kept up all year. In most quarters it is felt there will have to be further favorable developments in business generally if this rate is to be maintained, but there are hopes there will be such development. If a tapering off has to begin in a couple of months, however, it will be no new experience, for this occurred after March last year and after April the year before.

Second Quarter Buying

The Connellsville coke market has softened somewhat more. Prices are lower still and buyers continue quite reserved about taking hold. The whole point about coke is that producers pushed prices up too fast and could not maintain the position. Spot coke is now $3.90 to $4 for furnace and $4.75 to $5.25 for foundry, with off grade for coke, for heating and miscellaneous purposes, going at prices down to $3.50.

The pig iron market has been rather dull in point of turnover, but furnaces have secured their recently advanced asking prices on Bessemer and basic, making the market quotable up 50 cents at $22 for Bessemer and $22 for basic, while foundry remains quotable at $22 to $23, all prices f.o.b. valley furnaces, with $1.76 freight to Pittsburgh. Second quarter buyings should begin developing soon and prices may possibly recede a trifle, as present market prices are well above the average at which deliveries are now being made on first quarter contracts.

GLENN G. HOWE DIES AFTER LONG ILLNESS

Glenn Grenville Howe, for many years senior vice president of the Link-Belt Co., passed away at his home in Muskegon, Mich., after a long illness.

His first connection with the Link-Belt organization was as a 16-year-old office boy in 1877. Following his mechanical bent he drifted into the manufacturing department, and later became the superintendent of the Ewart Manufacturing Co. He knew the chain business thoroughly in practice and theory, and his connection with it was marked by several important improvements. When the Ewart Manufacturing Co., the Link-Belt Machinery Co. and the Link-

Glenn Grenville Howe

Belt Engineering Co., were merged as the Link-Belt Co., in 1906, Mr. Howe became vice president, in charge of Indianapolis operations. Under his directions the Belmont Malleable Iron Foundry, and Ewart assembly plant were built, in 1913. Later, he organized the Howe Chain Co., at Muskegon, Mich., serving as president. The sale of the Howe Chain Co. to the Link-Belt Co. was made in January, 1924, and the Muskegon plant is now operated as the Howe Chain Plant of the Link-Belt Co., specializing in chain manufacture, established under Mr. Howe's experienced directions.

NEW GAS PIPE LINE FOR SOUTHERN TEXAS

SAN ANTONIO, Tex., Jan. 24.—The Texas Co. has contracted to purchase the gas from the Cole Petroleum Co.'s No. 4 well which recently came in making more than 60,000,000 feet of gas, and has begun the laying of a gas pipe line from the well to Hebbronville and on east to Falfurrias in Brooks County. The well is on Block 8, Section 11, of the Ariage grant, and is in Duval County, close to the Webb County line. The distance to Hebbronville is 14 miles and the Falfurrias about 20 miles more.

Gas will be furnished both cities, each of which is a county seat. In addition, the plan is to develop an irrigated district. Wells supplying 600 bbls. of water daily can be had about Hebbronville at from 200 to 400 feet. The plan is to use the gas as fuel for pumping the water.

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succeeding the two firms of Gibson & Hull (Muskogee, Oklahoma,) and West, Sherman & Davidson (Tulsa, Oklahoma.)

Mr. T. L. Gibson will have charge of the Muskogee office located on the eighth floor of Barnes Building.

OKLAHOMA FIELDS

(Continued from Page 32)

No. 3 Davis, C NE SW SW, Section 23-2s-3w, was making 75 bbls. from sand at 2,980-90 feet, total depth 2,998 feet. The Skelly Oil Co.'s No. 2 Simpson, C NE NE NW, Section 25-2s-3w, was plugged back to 2,695 feet from a total depth of 3,133 feet, and was making 95 bbls. from sand at 2,240-75 feet.

The Rockland Oil Co.'s No. 10 Ringling, C NE NW SW, Section 35-2s-3w, found solid sands at 2,185-95 feet. 2,210-25 feet. sandy lime at 2,235-65 feet, and 2,265-80 feet sandy lime with water. The well was pumping 35 bbls. The Magnolia Petroleum Co.'s No. 13 Bennett, C NW SW NW, Section 31-2s-2w. was making 15 bbls. naturally from sand at 2,745-60 feet. The Healdton Petroleum Co.'s No. 2 Bogle, C NE NE SE, Section 6-3s-2w, was making 100 bbls. from sand at 2,808-27 feet. The Amerada Petroleum Corp.'s No. 6 Criner, NE cor. SE NE SW, Section 20-5s-1, was making 128 bbls. from sand at 1,968-79 feet. The same company's No. 5 Gardner, C SW NW NE, Section 20-5s1w, was dry and abandoned at 2,047 feet.

The Levant Oil Co. had a rig up for No. 2 Brewer, C SW NW SW, Section 27-1s-3w. The Humble Oil & Refining Co. had a rig up for No. 3 Hales, C SE NE SE, Section 28-1s-3w, and for No. 1 C SE SE SW, Section 22-1s-3w, The Tidal Oil Co.'s No. 1 Morgan C SE SE NW, Section 28-2s-3w, was drilling at 1,160. The Humble Oil & Refining Co.'s No. 1 Gillespie, C SE SE NW, Section 33-1s-3w, was rigging up. The Magnolia Petroleum Co. had a rig up for No. 1 Howard, C NW SW SW, Section 15-2s-3w. The Atlantic Oil Producing Co.'s No. 1-A Lahman, C NE NW NE, Section 25-2s-3w, was drilling at 760 feet. The Paige Syndicate's No. 6 McClure, CEL SW SE NW, Section 27-2s-3w, was drilling at 300 feet. The Magnolia Petroleum Co.'s No. 2 Arrington, C NW SE SW, Section 32-2s-2w, was drilling at 500 feet. The Schermerhorn Oil Co.'s No. 2-B Palmer, C NW NW NW, was drilling at 440 feet. The Southerland Oil Co.'s No. 4 Poland, C NE NW NW, Section 5-3s-2w, was drilling at 120 feet. The Amerada Petroleum Co.'s No. 1 Fish, CNL NE NW SE, Section 28-5s-1, was drilled at 465 feet.

Stephens County

The Magnolia Petroleum Co.'s No. 9 Bartley, NW cor. SW NW, Section 20-1s-8w, Stephens County, had 8,000,000 feet of gas shut in at 2,146-58 feet. The Lone Star Gas Co.'s No. 5 Scott, NE cor. SW SW, Section 19-1s-8w, was dry and abandoned at 2,355 feet.

The Magnolia Petroleum Co. was rigging up cable tools for No. 1, NE cor. Section 14-2s-8w, Stephens County. The same company's No. 2 Folsom, SW cor. Section 15-2s-7w, was dry at 1,472 feet.

The Humble Oil & Refining Co.'s No. 6 Ploughman, CEL NE NW, Section 25-1-9w, was drilling at 1,700 feet. The Magnolia Petroleum Co.'s No. 10 Harris, CNL NW NW NE, Section 25-1-9w, was rigging up for rotary. The Kelly Oil Co.'s No. 1 Warner, SW cor. NW NE, Section 22-1s-8w, was a rig up. McBride had a rotary rig up for No. 1 Bunch, CNL SW SE, Section 22-1s-8w. Winkler and others were cleaning out No. 2 Springer. SE cor. NW SE NW, Section 28-1s-8w. an old well and will deepen. The Magnolia Petroleum Co. was rigging up a rotary for No. 2 Weaver. NW cor. NE SW, Section 29-1s-8w.

Canadian County

The C. & O. Drilling Co. cemented the surface casing and shut down on No. I Sanders, NE cor. Section 29-11-7w, Canadian County.

Comanche County

Bentley and others' No. 1, Bentley, SE cor. NE NW, Section 29-1-12w, in Comanche County, was dry at 2,947 feet.

The Magnolia Petroleum Co.'s No. 1 Hill, C SE SW, Section 25-5-8w, Grady County, was drilling at 100 feet. Powell and Briscoe's No. 1 Williams, C NE SW, Section 11-4-8w, was spudded in and drilling started.

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Crude Advance Stimulates Securities

Prairie Oil & Gas Led the Movement in the Standard Group. Shell Union Featured. Public Attitude Toward Industry Now Optimistic

By. N. O. Fanning
Room 543, No. 30 Church St., New York

NEW YORK, Jan. 24.—Oil securities surged forward during the past week stimulated by advances in crude oil prices. Prairie Oil & Gas stock led the Standard group, selling up to 239, while the new "when issued" stock reached a new high of 59⅝. South Penn Oil followed the lead of the stock of the major purchasing company by going to 181, another 10-point gain during the week. Phillips Petroleum, of the oil stocks listed on the New York Stock Exchange, was prominent on the upturn, reaching a new high for the year of 41¼.

Shell Union Oil Corp. common stock was featured by extremely heavy trading, averaging 20 to 30,000 shares daily, and sold around its best price for all time, 26½. In connection with this buying it is reported a readjustment of the capital structure of this company is imminent, involving reducing the number of common shares and retiring the preferred. The preferred stock is callable at the companys' option at 110. It is now quoted at 100½. It is believed if a capital readjustment materializes, increased returns will be had on the common stock. The amount of preferred stock outstanding is $20,000,000. The company recently sold its interest in Union Oil Co. of California for a sum said to approximate $30,000,000 cash, and this money is said to be available for retirement of the preferred stock.

Although recovery of the oil industry has been rapid during the last month or two, the advance in oil securities has in itself served largely to restore confidence in the future of the industry. Public attitude toward the oil business, some leaders point out, goes to extremes, first being extremely pessimistic and then extremely optimistic. This, it must be admitted, is partly true of sentiment within the industry itself.

The oil industry has doubtless passed through the worst of a situation which was brought on by a decline in general business and overproduction. Both causes are slowly being removed. The output of crude petroleum in the United States in 1924 was lower than that of the previous year despite the development of such pools as Cromwell, Luling and the deep sand in Tonkawa. The output from these flush pools was partly offset by declines in California and Mexico.

Wortham has apparently proved less serious than expected, and there seems to be no other big pool in sight. Hence the optimism and increase in prices.

The other important factor which has induced optimism is the unprecedented winter consumption of gasoline. It appears now as if 1925 would witness relatively higher prices for gasoline than in 1924.

Reports from Baltimore stated that Cosden & Co. was planning to sell $10,000,000 bonds bearing 6½ per cent interest.

Marland Oil Co. has completed arrangement to retire on April 1 all of the remaining outstanding 10-year, 8 per cent series A sinking fund participating gold bonds, due April 1, 1931. Bonds of $2,710,000 are still outstanding. They will be retired at 105 per cent and accrued interest. Funds needed for the operation were provided by the sale of $20,000,000 2-year 5 per cent notes last October. When the 8 per cent bonds have been retired the 5 per cent notes will constitute the company's sole funded debt.

Sinclair Issues Strong

Sinclair Consolidated Oil Corp. common and preferred stocks were active toward the close of the week at their best prices for the year. The feature, however, was the activity and strength in the company's 6 per cent bonds which are due in 1927. More than $350,000 par value of the bonds were traded in on January 22 with a rise in the price from 106 to 108½.

The Texas Co.

Stock of The Texas Co. was active and reached a new high of 45. The company earned its 1924 common dividends in the first nine months of the year, and is said to be in a strong financial position at present. Paying $3 per share annually, the stock has remained within a very narrow range for some time.

Mexican Seaboard Oil

Mexican Seaboard Oil Co. passed the dividend of 50 cents per share which was due at this time. This action resulted in a decline in the price of the shares from around 20 to 15.

National Supply

National Supply preferred stock showed increased activity and advanced to a new high of 107. It pays 7 per cent annual dividends.

Producers & Refiners

Stock of Producers & Refiners Corp. sold up to 30¾, while the preferred sold at 45 (par $50). The majority of the stock is believed to be held in the treasury of the Prairie Oil & Gas Co. and therefore the amount outstanding available for trading purposes is small.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	§Dividend Rate	Clos. Quotations Jan. 26	Jan. 19	1924 High	1924 Low	1923 High	1923 Low
1.	American Republics	..	..	*58	55	48	25	..	..
2.	Associated Oil	25	6	36½	35	34⅝	27⅝	29¼	29½
3.	Atlantic Ref. com.	100	..	109	107¾	140½	78½	160	98¾
4.	Barnsdall "A"	25	..	24	22⅜	22¼	14	35	9⅞
5.	California Pet. com.	25	7	27½	26¼	29	19⅞	28½	17½
6.	Cosden & Co. com.	..	..	31½	30½	40¼	22⅝	62¼	23¾
7.	Gen. Am. Tank	..	†3	54⅛	55½	53	35½	71⅝	40
8.	General Asphalt	100	..	58⅛	57	63⅜	31⅝	64	23
9.	General Petroleum	25	8	44	42¾	45	38⅝	..	..
10.	Houston Oil	100	..	79¾	79	82½	61	78	40¾
11.	Independent Oil & Gas.	10	..	16¼	17	16¼	5⅜	11¼	3⅜
12.	Indian Refining	10	..	7⅜	6⅜	7	3⅜	8½	4
13.	Louisiana Oil	50	..	20½	20¼	..	..	..	..
14.	Maracaibo	..	..	28⅜	29	27½	25⅜	28¼	16
15.	Marland	..	..	44	43	42	29	59⅝	18½
16.	Mexican Seaboard	..	..	16⅞	16½	25⅜	14⅛	19⅜	5⅜
17.	National Supply	50	6	67½	66⅝	72½	54	68	54
18.	Pacific Oil	50	†2	59⅝	55⅜	58¼	45	52½	31½
19.	Pan American com.	20	16	66⅜	65½	65	44¼	93½	53
20.	Phillips Petroleum	..	†2	42¾	39½	42¼	28½	69⅝	19¾
21.	Producers & Refiners.	50	..	30	30	43½	23¾	58¼	17½
22.	Pure Oil com.	25	6	30⅝	29⅞	30¼	20	32	16¼
23.	Royal Dutch, N. Y. sh.	13.40	2.62	53¼	52¼	59½	40⅝	55⅛	40½
24.	Shell Transport	10	92½	*42¾	*41	42	33	41¼	29½
25.	Shell Union com.	..	†1	26½	26	22½	16¾	19¼	12⅜
26.	Simms Petroleum	10	..	23	24½	24	10⅝	16¾	6½
27.	Sinclair Cons. com.	..	..	20¼	18⅞	27½	15	39⅜	16
28.	Skelly Oil	25	..	27⅞	26	29	17¼	35	12½
29.	Standard of California.	25	8	63⅝	62½	68½	55½	64¼	47½
30.	Standard of N. J. com.	25	4	43⅛	41⅝	42¼	33	44¼	30⅞
31.	Standard of N. J. pfd.	100	7	117¾	118⅜	118⅝	115⅝	118¼	114¾
32.	Superior Oil	5	..	5	5	8⅛	2⅝	6⅜	2
33.	The Texas Co.	25	12	45⅜	44⅝	45⅝	37⅜	52⅞	34⅝
34.	Texas Pac. Coal & Oil	10	..	16⅜	14¼	15¼	8¼	24⅜	5½
35.	Tide Water Oil	100	4	138¼	133¾	151	116¼	144	94
36.	Trascontinental	..	..	5	4⅜	6¼	3⅜	14½	1¼
37.	Union Oil of Cal.	25	7.2	39	38½	39	35½	..	..
38.	Union Tank com.	100	5	*119½	*122	132⅞	94	114	106
39.	White Eagle Oil & Ref.	..	2¼	29⅜	28¾	29⅜	23¼	30⅝	20½
	Standard Oil Stocks								
40.	AngloAmerican Oil	£1	25	19⅜	18½	18¾	14⅜	19¾	13½
41.	Borne Scrymser	100	12	*229	*230	264	150	153	110
42.	Buckeye Pipe Line	50	14	69½	67¼	55½	51	94	57½
43.	Chesebrough Mfg. Co.	25	14	*51	50¼	62½	29¼	340	205
44.	Crescent Pipe Line	25	..	16	*13	20	11¼	25	15
45.	Cumberland P. L.	100	10	145	140	148	109	117	80
46.	Eureka Pipe Line	100	8	93	92	105	74	117¼	87
47.	Galena Signal com.	100	4	59½	58½	69⅜	52½	78	55
48.	Humble Oil & Ref.	25	4.8	43⅜	43¼	43⅜	36	41	28¼
49.	Illinois Pipe Line	100	12	154	145	161	123	171	115
50.	Imperial Oil Ltd.	25	12	124	123	119	99	123	92
51.	Indiana Pipe Line	50	8	84	79	100	66	103	81
52.	International Pet. Co.	100	x50	24⅝	23⅝	24⅝	16⅞	24⅝	13¼
53.	Magnolia Pet. Co.	100	4.5	154	142	162	124	166	123
54.	National Transit	12.50	16	25⅜	24¼	25⅞	20⅝	29	19½
55.	New York Transit	100	10	76½	74	97	54½	138	70
56.	Northern Pipe Line	100	6	86	85	107½	72	111	96
57.	Ohio Oil Co.	25	8	74	68½	79½	53	85¾	48¾
58.	Penn-Mex Fuel	25	..	39	38½	45⅝	27	45	10½
59.	Prairie Oil & Gas	100	8	260	230	269	193	272	152
60.	Prairie Pipe Line	100	8	124	111½	111	100	117	93
61.	Solar Refining Co.	100	15	220	*211	240	170	212	161
62.	South Penn Oil	100	..	195	174	176	117	196	100
63.	South West Pa. Line	100	4	*83	84	89	68	89	66
64.	Southern Pipe Line	100	8	*100	96½	100	80½	116	87
65.	Standard of Indiana	25	10	67	64⅝	69⅜	54¼	69⅞	48½
66.	Standard of Kansas	25	..	40⅜	40	50½	32½	56¼	36½
67.	Standard of Kentucky.	25	16	118⅜	120	121½	101	109½	76
68.	Standard of Nebraska.	100	20	255	*250	262	198	280	186
69.	Standard of New York.	25	5.6	47⅜	45½	48	37⅜	49¾	35½
70.	Standard of Ohio com.	100	10	356	353	377½	277	320	270
71.	Swan & Finch com.	25	..	26⅜	24½	28	20	..	..
72.	Vacuum Oil	25	†3.75	83	81¼	83¼	56½	55½	40
73.	Washington Oil	10	..	*29	*29½	29	25	28	20¼
	Miscellaneous Stocks								
74.	Cities Service bks. sh.	..	†21	18½	17⅞	19	13¼	18½	12⅜
75.	Gulf Oil Corp. of Pa.	25	6	67	67⅛	67⅝	56	68¼	45¾
76.	Mutual Oil	5	10	14⅛	14	14	9⅜	..	..

*Bid, no sales. †In dollars. §The figures in this column are kept up to date as far as possible, but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Jan. 26	56.09	Dec. 22	50.76	Nov. 17	50.07
Jan. 19	54.58	Dec. 15	50.36	Nov. 10	51.86
Jan. 12	55.28	Dec. 8	49.49	Nov. 3	48.16
Jan. 5	53.01	Dec. 1	49.59	Oct. 27	47.58
Dec. 29	51.73	Nov. 24	50.23	Oct. 20	46.99

Andian National Corp., Ltd., a Canadian concern, established to construct a pipe line from the Magdalena Oil Field in Colombia to Cartagena Bay on the Caribbean Sea, will make a public offering soon of $10,000,000 15-year sinking fund gold bonds bearing 6 per cent interest. The corporation has $10,000,000 bonds and 2,000,000 no par shares.

Sir Herbert Holt, president of Royal Bank of Canada, will head the board and English, French, Belgian, United States and Colombian names are likely to appear on it. Probably Sir Augustus Nanton, head of the Dominion Bank, will also be a director. It is understood the bonds have already been virtually underwritten. A Paris banking institution is interested and it is believed Baring Brothers will represent the English interest. The Andian concession was formerly held by the Holt group and runs 50 years. Its chief customer will be International Petroleum, whose product it will pipe to the coast and deliver to the International tanker fleet. Including the newly brought in well No. 32, production totals 15,000 bbls. daily. International's deepest hole is down about 3,000 feet. They pass through four oil-bearing strata with total sand thickness of about 250 feet.

Indian Refining Co.

Statement of Indian Refining Co., Inc., as of September 30, 1924, shows total assets of $25,098,992, compared with $29,705,910 same date a year ago. Consolidated balance sheet compares as follows:

	1924	1923
Assets.		
Real estate and machinery	$10,339,458	$13,563,963
Merchandise	3,228,998	3,833,498
Notes receivable	33,194	23,992
Accounts receivable	1,727,279	1,929,917
Cash	562,420	507,699
Securities	5,640,836	5,769,715
Deferred charges	413,037	845,323
Insurance funds	59,924	.....
Deficit	3,093,855	3,232,533
Total	$25,098,992	$29,705,910
Liabilities		
Capital stock	$10,147,080	$10,143,380
Mortgages	16,812	.....
Accounts payable	3,753,823	4,526,705
Notes payable and bank loans	886,486	3,001,250
Surplus capital	6,984,089	4,851,500
Miscellaneous reserves	3,310,702	7,177,075
Total	$25,098,992	$29,705,910

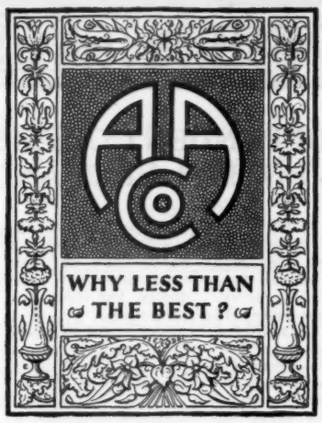
Cities Service Co.

Gross earnings of Cities Service Co. for the 12 months ending with December 31, 1924, were $17,463,218, compared with $16,602,562 in the preceding year. Net earnings amounted to $16,773,744, compared with $16,093,616.

ACREAGE DEAL CLOSED IN ZAPATA COUNTY

LAREDO, Tex., Jan. 24.—One of the largest deals for acreage consummated in Zapata County since the discovery of oil in that county recently closed involves a deed in fee from W. P. Trickett and others to the Charco Redondo Oil Co., covering 10,000 acres in what is known as the Charco Redondo grant of Zapata County. The consideration as given in the deed was $100,000.

By this deed the Charco Redondo Oil Co. takes over what is known as the old Zapata Shallow Field in the southern portion of Zapata County. It was in this shallow field where oil was first discovered in this portion of the country about 10 years ago while, during a drouth, stockmen on the Charco Redondo granted encountered oil at a depth of 160 feet. Later the field was taken over and operated by what was known as the Zapata Oil Co. and a total of 21 shallow wells were brought in at depths of from 160 to 165 feet, each making from 5 to 10 bbls. of oil per day.



DEPRECIATION

Every barrel of oil that flows from a well, that is pumped its lengthy course through a pipe line, or that emerges as gasoline or lubricating oil from a refinery, carries away with it a fraction of the value of the property used in its production.

Unless you know precisely what that reduction in value is, you cannot know definitely:

(1) How much to set aside to protect the integrity of your investment or your property.

(2) What your cost of operation is, and consequently whether your profit and loss statement is right or wrong.

(3) How to definitely prove to your stockholders or bankers the real worth of your physical assets.

(4) Whether your insurance coverage on insurable properties is adequate to assure full indemnification in case of loss.

The analysis of depreciation and depletion, the correct determination of actual investment in properties, and the establishment of provable value is possible only through appraisal service.

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REFINING AND MARKETING

INTERIOR OIL & GAS PROPERTIES ARE SOLD

WARREN, Pa., Jan. 24.—All that was left of the Interior Oil & Gas Corp., once a $1,500,000 stock company, was sold at receiver's sale in the Warren County court house for $23,425. The company's refinery at Tiona was sold to H. A. Logan and other Warren interests for $12,600, while 12 leases and lines in the town of Sheffield, Warren County, were sold to A. P. Blanchard of Tiona, Pa., for $7,400. The rest of the property, including two gasoline plants and two of the prize leases of this section were also sold to Blanchard.

The Interior Oil & Gas Corp. was formed in May, 1916, as the trustee of the Producers & Refiners Syndicate, all of whose property it held under a declaration of trust.

Membership in the Producers & Refiners Syndicate was sold at a par value of $100 and from that price up to $130 and they carried on their work selling the stock over a wide area until the books showed that $1,670,398.42 had been disposed of. The company bought various leases and built a small refinery near Tiona. During the war period the plant operated and its activities embraced oil and gas leases, a gasoline plant in the village of Sheffield and vicinity and in Kentucky and the short lived McKeesport gas field.

In October, 1922, certain stockholders became dissatisfied with the management and operations and brought proceedings in the Supreme Court of Chautauqua County and in the Common Pleas Court of Warren County, asking for an accounting and other equitable remedies. This litigation was finally settled by the formation of a new company, the Interior Oil & Gas Co., in January, 1923, and by the formation of the new company the dissatisfied stockholders obtained a representation on the board of directors and the property was transferred from the trustee to the new company.

In their efforts to finance the company and pay outstanding indebtedness the management sold certain properties of the company and in the United States District Court, Western district, on August 21, 1924, the creditors of the company asked for and obtained a receiver. Karl M. Lyons, of Warren,, Pa., was appointed as receiver. The various properties were appraised by A. W. Goal and George Craft and it was determined to dispose of them.

HIGH FUEL OIL RATE SHOWN ON CONTRACT

WICHITA, Kans., Jan. 24.—The high fuel oil market which has been in effect in Kansas for several weeks was reflected in the bids received by Wichita County on fuel contracts for delivery during next 90 days at county institutions.

The contract was let to the Waite Phillips Co., which has a refinery located here, on its bid of $1.84½ per barrel. The Sinclair Refining Co. and the Monark Oil Co. both submitted bids of $2.20 a barrel. The Sinclair company has been furnishing the crude at $1.49½ a barrel.

COMPLETE SAN BENITO PLANT

C. B. Hedrick and T. J. Holmsley have completed the construction of a refinery at San Benito, Tex. The owners operating under the name of the Valley Refining Co. will refine the light oil products but later expect to add lubricating oil and grease plants. The owners have leases in the Mirando, Texas, Field, from which they will secure their crude supply. The plant output will be marketed in the lower Rio Grande Valley, where the refinery is located.

MICHIGAN INDEPENDENT OIL MEN IN CONVENTION AT GRAND RAPIDS

GRAND RAPIDS, Mich., Jan. 24.—One of the largest attended State meetings of independent jobbers ever held was brought to a close with the final business session of the two-day convention of the Michigan Independent Oil Men's Association. Two hundred and fifteen registered at the convention.

H. H. Ragle, of the American Oil Corp., at Jackson, Mich., was reelected president of the association for a third term. The association has made remarkable progress under the leadership of Mr. Ragle and members felt the association's plans for the coming year demanded he continue as its president. R. L. Davenport, of the Detroit Independent Oil Co., Detroit, was elected vice president; P. M. Kempf of Saline, secretary, and F. S. Grimes of Grand Rapids, treasurer. J. A. Gilmore of Jackson was reelected field secretary. Mr. Gilmore has had charge of the preparations for the convention. Directors elected were R. L. Davenport, Detroit; J. J. Theisen, St. Joseph, W. C. Vandenberg, Holland; Peter Jensen, Escanaba; Ed Austin, Midland, and J. J. Cox, Ann Arbor.

Advocates Publicity

The morning of the first day was devoted to registration, viewing of exhibits and general renewing of acquaintances. The regular program was taken up at the afternoon session beginning with a key-

H. H. Ragle
American Oil Corp., Jackson, Mich., reelected president of the Michigan Independent Oil Men's Association.

note address by President Ragle, his subject being "Face Up." Mr. Ragle advocated playing the game with the public with the cards face up on the table, letting them know the facts and educating them to a correct understanding of conditions. The only other address on the afternoon program was that of F. C. O'Meara of Detroit, on "Character in Business." Each was followed by brief discussions.

The banquet was held Wednesday evening. A few remarks were made by President Ragle but the only formal address was that on "Basic Principles in Salesmanship," by Alfred P. Haake, Ph. D., Detroit.

The morning session of the second day was set apart for a closed session for members only at which the chief matter of interest was the election of officers. At the noon luncheon, R. L. Davenport spoke regarding the proposed gasoline tax and advocated letting the public know the facts. Results of such taxes were not unfavorable to the industry, but the public should know who paid them.

Oil Burners a Topic

At the afternoon session on Thursday the address of E. A. Hanley of the Michigan Independent Oil Co., Three Rivers, provoked considerable discussion and exchange of experiences. James A. Gilmore spoke on "Oil Burners and Burner Oil." He favored the cooperation of the oil and burner industries to get better results for both and decried the use of small storage tanks in the homes as making good service difficult and adding greatly to the expense of the oil distributors. The prize drawing concluded the meeting, prizes being offered open to all registrants and to all Michigan oil men who registered at display booths. The exhibits numbered 14, a limit enforced by the available space.

The following companies had exhibits at the meeting: Milwaukee Tank Works, A. Y. McDonald Manufacturing Co., Graver Corp., Tower Products Co., Raymond Garage Equipment Co., C. R. Folsom Iron Works, Inc., Tokheim Tank & Pump Co., The McSavaney Co., S. F. Bowser & Co., Inc., Guarantee Liquid Measure Co., Pulte-Korreck Machine Co., Bennett Pump Corp., The Heil Co., Fleckenstein Visible Gasometer Co., L. B. Beck and Childs Sales & Equipment Co.

BRYAN'S GASOLINE STATION ABANDONED

LINCOLN, Neb., Jan. 24.—The State of Nebraska's filling station placed in operation here by Governor Bryan several months ago was closed yesterday. The station has exhausted its supply of gasoline and Governor Adam McMullen has not issued instructions for additional purchases from the refiners. The station sold 82,000 gallons of gasoline. The retail price was 15 cents for a time and later 13 cents.

The city of Lincoln's station recently opened is still retailing gasoline at 13 cents per gallon. A hearing in connection with the injunction suit brought by the Mutual Oil Co. and other oil marketing concerns, will be held in Federal Court here next week.

ELECT DIRECTORS AND OFFICERS

OIL CITY, Pa., Jan. 24.—Stockholders of the Empire Oil & Grease Co. reelected the following directors: A. L. Confer, Fred Fair, E. W. Chase, E. R. Gnade, A. R. St. Clair of Ashtabula, T. C. Hawkley of Tidioute, J. J. Rhoads and A. W. Scott. The following officers were elected: A. L. Confer, president; Fred Fair, vice president; A. W. Scott, secretary and treasurer; C. L. Kahle, assistant secretary and treasurer. Mr. Kahle's position is a newly created one. Reports showed that the past year had been the best in the history of the company, in volume. The expansion included the addition of a large number of service stations and enlargement of the plant at Reno.

ACCEPT SILICA GEL PLANT

BALTIMORE, Md., Jan. 24.—The Silica gel commercial plant installed by the Royal Dutch-Shell at its New Orleans refinery has been formally accepted and final payment made. This was the first large oil plant equipped by the Silica Gel Corp. and has been given approval by the technical organization of the Royal Dutch Shell Co.

Changing Cosden & Co. Name to Mid-Continent Petroleum Corporation

NEW YORK, N. Y., Jan. 24.—If stockholders accept the recommendation of officials of the company, the name of Cosden & Co. (Delaware), one of the most widely known producing and refining organizations of the Mid-Continent Field will be changed to Mid-Continent Petroleum Corp. In a letter to the stockholders, Jacob France, elected president of the company several months ago, announced this proposed change in name which will come up for action at the stockholders. meeting to be held February stockholders' meeting to be held Febru

It was also announced that $12,500,000 first mortgage 15-year 6½ per cent sinking fund gold bonds had been sold to Kuhn, Loeb & Co., Hallgarter & Co. and Cassatt & Co. The proceeds of the sale of these bonds will be used to retire certain purchase money lease obligations, to liquidate bank loans and for other corporate purposes. With the retirement of these obligations, the present bond issue will constitute the only funded debt of the corporation excepting $1,898,650 purchase money obligations maturing in 1926 and 1927.

In listing its assets, the company states that the Mid-Continent Petroleum Corp., which will include the Cosden Oil & Gas Co., and the Atlantic Petroleum Corp., as well as Cosden & Co., has oil and gas lands aggregating 195,136 acres in Oklahoma, Kansas and Texas; a 30,000-bbl. complete refinery at West Tulsa; 2,100 steel tank cars and 1,270 miles of trunk and gathering pipe lines. The company has 1,400 producing wells with an average daily production of 14,000 bbls. The company operates 14 natural gasoline plants. The company's average daily production in 1924 was 12,621 bbls.; in 1923, 10,411 bbls.; 1922, 9,454 bbls.; 1921, 5,961 bbls. and 1920, 7,970 bbls. The average daily crude runs to stills was 22,489 bbls. in 1924; 18,989 in 1923 and 27,689 in 1922, the largest crude runs in the company's history.

No announcement has been made as to the reason for the change in name. It is believed to be due to the fact that J. S. Cosden, former president of the Cosden companies and their founder, expects to reenter the Mid-Continent Field with a new company which will bear his name. It is said he has been negotiating both for production and a refinery. Mr. Cosden practically retired from participation in the management of the Cosden companies when he became chairman of the board of directors last year.

BUILDING NEW STATIONS

The Dixie Oil Co. completed plans for a wholesale oil products station at Osceola, Ark., to cost about $10,000. At Perryville, Ark., the Standard Oil Co. of Louisiana is to install two 10,000-gallon gasoline tanks as the beginning of a wholesale distributing station. The Texhoma Oil & Refining Co. is to start construction soon of a $10,000 filling station in Wichita Falls, Texas.

APPOINTED CHIEF CHEMIST

Arthur L. Davis, formerly connected with the Wood River plant of the Standard Oil Co. of Indiana, has been appointed chief chemist of the Empire Refineries, Inc. Mr. Davis will be located at Okmulgee, Okla., where one of the company's four Mid-Continent plants are located. Mr. Davis succeeds A. P. Bjerregaard, well known chemist who has been connected with the Empire companies for several years. Mr. Bjerregaard will do special research work for the company in the future.

Construction of Chimney Important

Should Be of Proper Size and Material to Satisfy Plant Needs. Use of Steam Separators and Superheaters

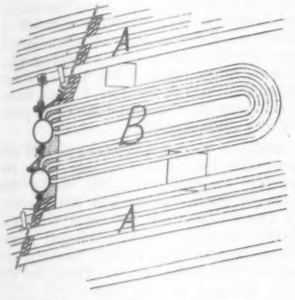
By R. L. Walde
Superintendent Lorraine Refining Co., Bristow, Okla.

LAST OF SERIES ON CONSTRUCTION

The accompanying article by R. L. Walde is the third and last of a series, the first two of which appeared in the January 15 and 22 issues of The Oil and Gas Journal. In this series of articles, Mr. Walde has discussed in detail practically every phase of construction that is either directly or indirectly concerned with steam power in refinery operation. The first article dealt with the different types of boilers and their relative merits in fuel economy. The second article was mainly concerned with feed water including an explanation of the use of regulators, preheaters, boiler compounds and scale cleaners.

Two forms of draft are used, namely: Forced and natural. Forced drafts are created by fans, steam jets and blowers. None of these forced drafts is in general use in refinery practices. Natural drafts are, of course, the cheapest, especially after the original installation.

Stacks (chimneys) are used to produce natural drafts. The theoretical maximum static draft of a chimney is the difference in weight between the column of heated gas on the inside of the chimney and an equal column of air directly on the outside of the chimney. Assume H is the height of the chimney in feet, A is the density of the outside air in pounds per cubic foot, G. is the density of the heated gas on the inside of the chimney in



A = Water Tubes
B = Superheaters
Fig. 7

Superheater in water tube boiler

pounds per cubic foot and 0.192 is the factor for converting pressure in pounds per cubic foot to inches of water. Then the maximum theoretical static draft in inches of water = 0.192 H (A − G).

In ascertaining the size of a chimney to be built, one of the factors to be taken into consideration is the chimney losses. These losses consist of the friction on the walls of the chimney, on the tubes and walls of the boiler, and on the dampers and fire box.

Proper Size of Chimney

It is a very difficult matter to compute the exact proper size of a chimney to insure most efficient results. There are many factors that enter into this, and part of these governing factors change under different conditions. To give an idea of the complexity of the problem, here are some of the circumstances which must be taken into consideration: The kind of fuel to be used, the load to be carried by the boilers, the construction of fire box and ducts leading to the chimney, atmospheric conditions, temperature of flue gases, temperature of outside air, the type of boilers to be used and the dominating factors of size and number of boilers to be used.

Here is a formula that is sometimes used for a coal burning chimney. Height of chimney $= \frac{(0.3 \times HP)^2}{E^2}$ where HP is the horse power and E is the effective area. The formula for the effective area is $A - 0.6\sqrt{A}$, where A is the inside area at the top of the chimney in square feet.

This formula is quoted not so much for its value in building chimneys but it may serve as an aid or check. The formula is only approximately correct since it does not take into consideration all the controlling factors. Previous experiences and observations coupled with the study of all the factors that enter in are more valuable that formulae in building chimneys.

As mentioned, the above formula refers to a coal burning chimney. Other forms of fuel would vary this materially. For instance, a chimney for fuel oil burning should be much smaller to carry the same load. Here is a comparison of the two under the same conditions: A fuel oil burning chimney 33 inches in diameter by 90 feet high will carry the same load as a coal-burning chimney 36 inches by 125 feet. However, this cannot be used as a proportion for it will not hold true for all sizes as will be seen from this comparison: A fuel oil chimney 120 inches by 160 feet will carry the same load as a coal burning chimney 144 inches by 300 feet. All of this goes to prove that the proposition of accurately computing the proper size of the chimney for a given set of conditions is a problem for the man that has made this a special study.

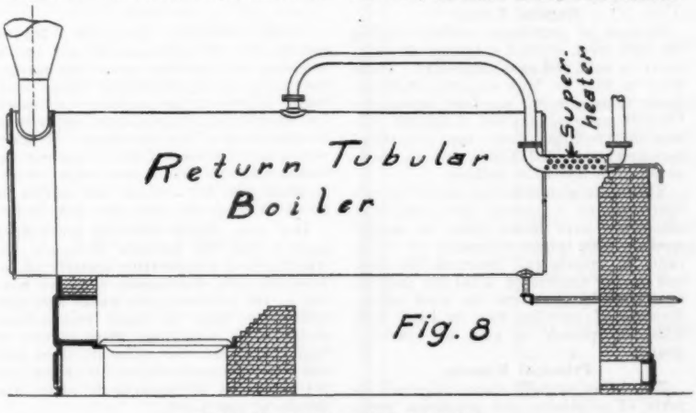


Fig. 8

Superheater in Return Tubular Boiler

Types of Chimney Construction

There are three types of chimneys, namely: Steel, reinforced concrete and masonry (brick and stone).

There are two kinds of steel chimneys: Those that are guyed and those that are self supporting. For small chimneys the guyed type can be built at less expense, since lighter iron can be used and it is more easily erected. However, for a large chimney, the self supporting type is more desirable, since the iron necessary to withstand the strains is practically heavy enough to make it self supporting.

Steel chimneys, in general, have the advantage of taking up less space, of weighing less, having less exposure to the wind, being more easily and quickly constructed, and in most cases, costing less. Their disadvantages are as follows: Cost of upkeep in painting them quite frequently and the corrosive action of the flue gases on the inside, especially, if there are large quantities of sulphur compounds in the gases.

Reinforced Concrete

Large chimneys are very frequently built of reinforced concrete. In such construction it is necessary to put a fire brick lining on the inside part way up in order to protect the concrete from the hottest gas near the bottom. This kind of construction is coming to the front more and more and in some cases is taking the place of steel and brick. They can easily be made in any form desired. There are no joints and they have a great resistance to expansion and contraction forces.

Brick Chimneys

The general construction of brick chimneys (masonry) is similar to that of furnace walls—a lining of fire brick and an outer wall of common brick. The lining which protects the common brick from the heat does not support the weight of the chimney so in figuring the thickness of the wall the lining must not be considered as part of the wall. In some cases, this lining only goes up part of the way and in others, it goes the full length of the chimney, depending upon the heat of the gases on the inside.

This formula is sometimes used to compute the proper thickness of the wall in inches at the highest point of the chimney (top course). Thickness of wall in inches = 4 plus 0.05 D, plus 0.0005 H, where D is the inside diameter, in inches, on top, and H is the height of the chimney, in inches. As mentioned above, this is the thickness of the wall on the top of the chimney. Beginning at the top with this thickness, add 4 inches to the thickness for every 25 to 30 feet downward, using a batter of 1 in 30 to 1 in 36.

Fig. 9

Superheater

Steam Superheaters

The steam generated by the ordinary boiler not using a superheater is known as saturated steam. Theoretically, saturated steam is that steam existing at the lowest temperature at which it can remain as a vapor under a given pressure. For example, at zero pressure (atmospheric) inside the boiler the temperature of dry saturated steam is 212 degrees Fahrenheit. As the pressure on the inside of the boiler increases, the temperature of steam definitely increase. At 50 pounds the temperature is 297 degrees Fahrenheit, at 100 pounds pressure, it is 388 degrees Fahrenheit and at 150 pounds it is 366 degrees Fahrenheit. It will be observed, however, that the temperature is not directly proportional.

This dry saturated steam, after it has left the water from which it was liberated, may have its temperature raised above that corresponding to its existing pressure. Steam, therefore, with a temperature higher than that of saturated steam, as a given pressure, is said to be superheated. The difference between its final temperature and that of saturated steam is 353 dgrees Fahrenheit. If this steam is superheated to 553 degrees Fahrenheit without changing the boiler pressure the degree of superheating is 200 degrees.

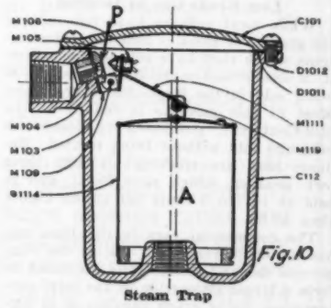


Fig. 10

Steam Trap

Amount of Heat Required

Theoretically, the work done by steam is proportional to its heat units. It is, therefore, self evident that superheated steam will do more work under similar conditions. One might think that the additional energy in superheated steam would be offset exactly by the additional fuel used in superheating it. This is not the case, since a large per cent of the fuel is used in converting the water into steam without any increase in temperature. For example, the latent heat of vaporization for water at atmospheric pressure is 972 B.t.u. per pound, in other words, it takes 972 B.t.u. to convert one pound of water to steam at atmospheric pressure without any raise in temperature. This heat, comparatively speaking, is lost in making saturated steam, while the additional heat applied to the

(Continued on Page 260)

EASTERN REFINED MARKETS ADVANCE; CONSUMPTION IS UNUSUALLY HEAVY

By N. O. Fanning

NEW YORK, Jan. 24.—The eastern refined market, like other sections of the United States was disturbed by the general crude and tank wagon prices advances which have materialized during the past few days. However, it is not possible at this writing to determine just what changes, if any, will result in the prices asked by the refiners. In this section both the Standard of New York and the Standard of New Jersey advanced their tank wagon and service schedules. That of the New York company was 1½ cents in the entire territory, effective today, bringing the tank wagon schedule to 18½ cents in New York and New England. This change followed the action of the New Jersey company, which advanced 1½ cents in New Jersey and 2 cents in the remainder of its territory on Friday. This was the second general advance of these two companies within the past 10 days.

Consumption continues unusually heavy for this time of year despite the fact that for the last two weeks the ground has been covered with snow. Autoists continue using their cars just the same, and commercial use of trucks and taxicabs is unabated. In fact the use of taxicabs has increased in New York City with the inclement weather.

As a result of the favorable situation in gasoline, local refiners are increasing runs. The disadvantage of cracking is that it cuts into the supply of fuel oil, demand for which is also very large. Between the increased demand for practically all the principal products of petroleum, the industry is in what might be called a healthy state in this territory. The export demand has helped the oil situation materially, and it is doubtful whether conditions in the oil industry will recede despite Wortham, or the discovery of even another similar pool.

Low Grade Gas in Demand

While local refiners have not reduced the gravity of gasoline sold to service stations which they have refined themselves, it is understood more 58-60 gasoline is being sold in the East than ever before. Most of this gasoline is refined in the Mid-Continent, purchased by marketers here and sold without being treated. Refiners here are stocking up with their own product, which runs 59-63, and is held at 1¾ to 3 cents per gallon higher than 58-60.

The commercial cars in the East can use the 58-60 very well, and as the commercial demand has steadily increased to form a larger proportion of the total consumption, lower grade gasoline is in bigger demand than ever.

The change is not so evident over a period of months, but is apparent during the period from 1920 to 1925. There was a time when only the highest grade of gasoline was sold here, and one of the largest companies sold nothing but 64-66, asking 1 cent per gallon more on a tank wagon basis than any other marketer. As the demand for lower gravity gasoline increased this company had to do away with its old policy and had to sell at the same price as its competitors, although its present product has a reputation for ranking with the best sold here.

Another reason for the greater use of lower-grade gasoline is that the higher grades of crude petroleum are more scarce with relation to the total supply. Eastern refiners, formerly using eastern, central west and the best Mid-Continent crudes, are now forced to buy lower grades of Texas, Arkansas, Louisiana, California and Mexican light oils. It would be impossible even to supply the demand for gasoline from these if it had not been for the more general use of cracking.

Kerosene Strong

Kerosene, a product which has lagged behind the others for more than a year, is beginning to show signs of life. This is partly the result of increasing demand and partly due to strength in fuel oil and gasoline. One local refiner has raised its bulk price ½ cent to 9 cents per gallon. It is expected that before long the tank wagon market will be advanced at least a cent.

Furnace oil consumption has been extremely heavy here this winter—gravity runnning from 32 to 40 Baume—and this has cut into kerosene somewhat. The supply of kerosene is liberal and the general statistical position is not so favorable as in the case of gasoline. Nevertheless, considerable improvement has taken place during the last two weeks, and with a revival of the export demand now evident kerosene is expected to have its day.

Gas and Fuel Oil Firm

The market for gas oil is firm, with a new increase in prices anticipated. Bunker fuel oil and Diesel oil are both firm, although in recent weeks the supply of both has increased considerably, and there is no danger, so far as can be learned, of a "jam" which would force sharp price advances. The market is in a healthy condition, but refiners are not anxious to see further price increases because of the psychological effect upon the consumer.

Lubricants Firm

The domestic lubricating oil demand continues strong, and prices remain at their highest levels. Red oils alone seem not to share in the generally strong condition of the lubricating oil market.

Paraffin wax shows a somewhat soft tendency. There has been some let up in domestic requirements and a distinct lapse in the export movement, the two developments making for lower prices. The present situation is attributed largely to a natural decline following record consumption, and a renewal of strength is expected in the spring. This is already indicated by forward inquiries.

Exports Lower

Exports of petroleum products during the past week showed a falling off, especially in bulk and case shipments. There were in fact no bulk exports whatever. Case shipments of gasoline aggregated 883,690 gallons, against 3,459,030 gallons the preceding week; case exports of kerosene were 1,315,530 gallons, compared with 3,764,730 gallons.

Shipments of lubricating oils in barrels continued at a strong pace and wax shipments were larger than in several weeks. The larger shipments of lubricants in barrels (all items of 500 bbls. and more) aggregated 2,231,020 gallons, against 324,500 gallons the week before. Exports of paraffin wax in bags were 2,231,020 pounds, a gain of 1,906,520 pounds.

Principal Exports

The following table shows principal exports of petroleum and petroleum products from New York reported during the past three weeks (figures in gallons unless otherwise stated):

Item and how shipped— Gasoline—	Jan. 21	Week ended— Jan. 14	Jan. 7
Bulk	.....	2,671,334	2,341,354
Cases	883,690	3,459,030	2,718,050
Kerosene—			
Bulk	.....	5,276,481	636,814
Cases	1,315,530	3,764,730	2,223,760
Gas oil—			
Bulk	.....	677,840	.....
Fuel oil—			
Bulk	.....	809,480	.....
Lubricating oil—			
Bulk	.....	2,574,150	.....
Barrels	1,417,650	1,086,950	1,138,074
Cases	.....	185,990	156,530
Paraffin wax—			
Bags, pounds	2,231,020	324,500	906,180
Barrels	1,910	550	1,657
Crude oil—			
Barrels	.....	5,507	630

Principal exports of lubricants and wax were to European countries. Italy was easily the largest consignee, shipments destined for that country aggregating 345,250 gallons of lubricating oil in barrels and 1,884,300 pounds of wax. It is explained that considerable wax shipped to Italy is for use in making candles for church ceremonies.

Oil Receipts Decline

Receipts of crude and refined oil at Atlantic Coast ports are estimated 351,000 bbls. daily for the week ended January 21. The feature was the smallest receipts from California since the movement of Pacific Coast oil through the Panama Canal started in 1922. The average was 26,000 bbls. daily, comparing the 61,000 barrels daily the preceding week and 146,000 bbls. daily for the week ended January 7. The daily average so far in January (the first three weeks) of approximately 78,000 bbls. daily compares with an average of 83,000 bbls. daily during December and a peak for 1924 of 159,000 bbls. daily during January. Without question the movement of California oil through the Canal is undergoing a considerable reduction compared with the 1924 rate.

Receipts of oil from Gulf Coast ports during the week ended January 21 averaged 257,000 bbls. daily, against 244,000 bbls. daily the preceding week, a gain of 13,000 bbls. Imports were practically cut in half, averaging 68,000 bbls, compared with 183,000 bbls. the week before.

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic ports from Gulf and Pacific Coasts of the United States, and imports, for the last three weks; also monthly record for the last 12 months. (Figures in barrels):

	Week ended— Jan. 21	Jan. 14	Jan. 7
Gulf Coast	257,000	244,000	319,000
Pacific Coast	26,000	61,000	146,000
Imports	68,000	183,000	78,000
Total	351,000	488,000	543,000

Daily Averages by Months 1924—	Gulf	Pacific	Imports	Total
December	306,000	83,000	85,000	474,000
November	246,000	80,000	150,000	476,000
October	246,000	120,000	88,000	454,000
September	270,000	104,000	101,000	475,000
August	310,000	127,000	84,000	521,000
June	302,000	133,000	136,000	571,000
July	318,000	85,000	114,000	517,000
May	276,000	122,000	144,000	542,000
April	262,000	143,000	123,000	528,000
March	201,000	137,000	130,000	468,000
February	174,000	175,000	108,000	456,000
January	127,000	159,000	79,000	365,000

Imports are lagrely from Mexico, with occasionally a shipment from Venezuela, Trinidad or Peru.

NORTH TEXAS MARKET SHOWS STRONGER TREND

FORT WORTH, Tex., Jan. 26.—A combination of circumstances has had a tendency to somewhat upset the market on refined oils in the North Texas territory. However, the tendency is toward a strengthening of the market rather than a weakening of the structure. Refiners and marketers are a little at sea yet because they have not been able to determine just how strong the market is going to be during the next few weeks.

One main factor affecting the refined market was the advance in crude oil. Another is a comparative scarcity of refined products, due largely to heavy buying in the territory two weeks ago, and while the price in most commodities seems to be very firm there is only a limited movement of material. Just now the largest movements are for export and for deliveries of sales made about the middle of the month.

Quotations this week are considerably higher than a week ago on the higher grades of gasoline, though there is very little selling compared with the previous week. There is comparatively little product being offered and the inquiries are very limited.

New Navy gas is being quoted at 9 cents to 10 cents. Pierce Petroleum Co. paid 9⅛ cents for 15 cars and the Magnolia paid 9¼ cents for a smaller amount. Both the American Refining Co. and the Panhandle Refining Co. at the close of the week were quoting New Navy at 10 cents. Practically all refiners are asking 13½ cents for 64-66, 375 for delivery during the next 10 days. Where spot delivery is demanded all refiners are quoting New Navy at 9 cents.

The market on natural gasoline is strong, showing only very slight changes from the previous week. Inability to move this product is said to be largely responsible for the strength in the market. There is a keen shortage of insulated cars for movement of natural gasoline. Marketers report a good demand for all grades. Grade C is quoted at 7⅜ to 8 cents, B grades at 8½ cents to 8¾ cents and A grades at 9 to 9¼ cents.

Fuel oil is showing some strength. In the Wichita Falls territory it is quoted at $1.35 to $1.45 per bbl. There is still a scarcity of gas oils which are being quoted at 3½ to 3⅝ cents and very little to be had at those prices. The prices on fuel are slightly higher than they were a week ago and sellers are still offering only comparatively small shipments.

There is very little change in the kerosene market from a week ago. It is being quoted at 4⅜ to 4½ cents. Refiners are said to have a plentiful supply but the demand is limited.

On the whole it might be said the refined market in North Texas is showing considerable strength. The numerous tank wagon advances on gasoline in various sections of the country played a good part.

DIFFERENCE IN PRICES QUOTED IN HOUSTON

HOUSTON, Tex., Jan. 26.—The gasoline situation in Texas is a badly mixed affair, with practically all the large marketers quoting different prices. Throughout the State generally the price at service stations is 15 cents and 12 cents tank wagon. These prices prevail in common point territory, but in the cities the "war" is more apparent. The Humble Oil & Refining Co. is selling coupon books at $8.55 good for $10 worth of gasoline, which makes its quotations 1 cent lower than the Gulf Refining Co.; 2 cents below those of The Texas Co. and Magnolia Petroleum and 3 cents below the Pierce Oil Corp. and the Cities Service Co. (Empire Co.)

Refiners report sold ahead on fuel and say such quotations as they make are merely nominal. On lub stocks, 300 pale is quoted 16-17 and 500 viscosity at 18-19 cents. No. 4½ color, 1,200 and 2,000 viscosity are also nominal quotations. No. 5, 6-color, 300 viscosity, red oil, is 14½-15½ cents. These are the only changes for the week.

Joseph P. Gillen, who has been connected with the Deepwater Refining Co. since its organization as plant superintendent, has been elected vice president of the company. He is one of the first ment to handle coastal crudes and is an authority on making lub stocks from Gulf Coast crudes.

The movement of crude from Texas City to Atlantic seaboard refineries has exceeded 2,000,000 bbls. since the first of the year. The tankers Walter Jennings and Charles Pratt, of the Standard Oil Co.'s fleet, each loaded 120,000 bbls. at one cargo and later the W. C. Teagle started north with the same amount.

Complaint has been made to the attorney general's department at Austin that many gasoline dealers in the State are not paying the tax of 1 cent per gallon. It is reported the legal department of the State says the amounts are too small to bring suits on, but in the aggregate they amount to a considerable sum, as the practice extends all over the State.

OIL CITY QUOTATIONS UNSETTLED, ADVANCING

OIL CITY, Pa., Jan. 24.—The big news of the week in the Northwestern Pennsylvania refined district were today's increases in gasoline and crude oil prices. As the result of the advance of a cent in the gasoline tank wagon and the increase of 25 cents in Pennsylvania crude quotations the market on refined products here today is very unsettled and there is quite a range in the prices being asked by the different refiners. However, it is certain the quotations for products will be increased all along the line as many of them are scarce and hard to obtain at many of the refineries in this district.

There is little activity in the present market for kerosene, but the rest of the market is either as good or better than it was a week ago. Wax and stocks seem to be especially scarce at present.

CHICAGO LOOKS FOR FURTHER ADVANCE

Refiners Figure Tank Wagon Advance Only Met Raise in Crude. Buyers Awaiting Developments. Big Companies Reported Worrying About Crude Supply. Fuel Oil Overbought. Distillates Move Better. Kerosene Slow

By J. B. Waldo

CHICAGO, Jan. 26.—If anyone can convince a Chicago oil man that half a loaf is better than no bread, now is the time to exercise his persuasive powers. In fact, a lot of the local fraternity figure they are worse off than they were before last Thursday when the price of Mid-Continent crude and the gasoline tank wagon in the Indiana territory were advanced. The advances came so closely together that it seemed almost as if the latter was already to shoot as soon as the Prairie Oil & Gas Co. said the word. What makes the local oil men see things through smoked glasses is that the tank wagon advance was for only 1 cent. Their only consolation is they believe that the tank wagon price in this territory will be advanced again and that shortly.

Refiners figure the best any of them can do is to get 21 gallons out of a barrel of crude and that to do this he must have a good cracking system and a high grade crude. The advance of 25-cents a barrel increased the cost of the gasline for crude alone more than 1 cent a gallon so that the refiners will have to have all of the advance in the tank wagon to make up for the added cost of production and still be out of pocket. On the other hand the jobber cannot afford to pay practically any advance. He needs, the way he figures it, all of the increase to care for the present cost to him of gasoline. Right here in Chicago, the tank wagon price, according to all but the Standard Oil Co., is 14 cents a gallon. This is its quantity price but other companies use it as their tank wagon price and sell on that basis. Some of the distributors make the station price 2 cents higher than the quantity price, their prices being 16 cents at the station against the regular 17 cents price. Freight to Chicago from Group 3, is 2.38 cents a gallon. The city collects and inspection fee of one-eighth cent which makes the two cost the jobber 2½ cents, to which he insists he must add 4 cents as the minimum cost of doing business, making the price that he can pay for his motor gasoline not to exceed 8½ cents on the present 15-cent tank wagon basis. In some cases there is a profit in the extra 2 cents he gets for his gasoline when sold at the filling station but this depends on the quantity of business done, the amount of the overhead, etc., and there is little, if any profit in conducting a filling station at this time of the year. This shows the opinion of leaders in the independent industry here as to the result of the advances of 25 cents a barrel for crude and 1 cent a gallon for gasoline at the tank wagon.

Awaiting Developments

It is right now a question of how much gasoline the jobber will have to have. Those purchasing in the open market are not buying. Those with contracts are taking what they need but even Tulsa refiners admit in their messages to their local representatives the demand from the jobbing trade is light. Here it is the general opinion that the exporters will not buy at the prices refiners are trying to get for their product and there are many reasons why the trade is bound to wait a while and see just how it all figures out. Outside of the cities the consumption is light, seasonably so. The consumer will not run his car in the present weather conditions any farther because the gasoline he must use will cost him more. The trade believes that U. S. Motor gasoline is accumulating with the refiners and, if not, it is because of export buying which may not continue and which does not apply to the most used grades in any event. The trade is all at sea and awaiting developments. As to selling prices, they are so busy keeping track of advances in crude and tank wagon prices they have not given the matter much consideration. Some of the larger refiners promptly advanced their quotations 1 cent a gallon for gasoline, making motor gasoline 9½ cents, but buyers say the refiner always makes this his first move and then begins to lower the price until he arrives at one at which they can do business. All previous quotations are withdrawn and the leveling process begins at once. Just what the level is depends a good deal on which side of the market one happens to be.

The word is heard here that the management of the big companies are really worried about crude supplies and that they have said something must be done to stimulate drilling. If this is the case, the price of Mid-Continent crude may be expected to advance again. This will give the producers a better show and the refiners and distributors have no objection, provided there is a balance between prices, some sort of relationship to the various factors to the price structure that will permit the refiner to refine at a profit and the distributor to get paid for his investment and labor. At this writing there is some 437 end point gasoline available to marketers for January at 8¾ cents and jobbers can buy in certain places at 9 cents. It looks very much as if the market would finally stabilize at around 9¼ cents for motor gasoline. The higher gravities are held very firmly and the 60-62 400 seems out of line when a price of 10¾ cents is asked for it, yet some are asking that price but getting no busienss, they admit. So far as gasoline is concerned the demand right now is very light. Some of the largest sellers have sold only a car or two since the advance was made and one large concern did not book an order for a single car of gasoline for two days, although it has done a big business in fuel oils and distillates which seems to show the jobbers are not in need of further supplies.

Kerosene and Distillate

Kerosene is moving very slowly with almost no demand and reports of export business are merely received with a shrug. The market has not been strengthened as to either domestic demand of prices by the advance in crude, prices quoted being the same as for the last couple of weeks.

Distillates have moved a little better but the weather has not been cold enough to increase consumption greatly, and while prices are fairly firm, there is no increase in prices quoted. Supplies at the refineries are ample and at times there is some evidence the stocks are larger at the plants than refiners believe they should be, and they want shipping instructions. The weather is just a good average brand of January weather and should bring in an average amount of business, but not the rush the subzero weather of late December brought. The distributors are not rushed and they would would like a little larger demand. This is one feature of the business that will have to be worked out in the light of experience, how to keep the furnace oils moving as steadily as possible. Of course, the coal man has the same problem, rush deliveries nights and Sundays for a week and then teams idle part of the time the next. But the coal man's storage does not cost him so much as the oil man and the territory he covers is seldom so great. It is more of a neighborhood business.

Fuel Oil Over-Bought

Fuel oil has been over-bought or oversold and deliveries have not been as rapid as was expected, resulting in some pressure to move stocks. The advance in crude has made a lot of the contracts

(Continued on Page 256)

Together we stand— Divided we fall

The above statement is as true today as it was years ago. Particularly is it true of the oil business.

The crude oil as it is taken from the wells would have little value if it was not for the refiners who make it marketable. On the other hand the refiners would have no business if the supply of crude oil was ever stopped.

The oil jobber and the refiner are equally as dependent on each other. The refiner would have a hazardous, expensive market except for the jobber. The jobber would have nothing to sell the dealer except for the refiners.

One has to imagine the real difficulty the dealers and refiners would experience in doing business direct in order to fully grasp the full worth of the oil jobber.

The dealer who has calls for all grades of oils would have to order from as many refiners in different parts of the country. This would mean long, business-losing delays.

The clerical expense of doing business with a large number of dealers would immediately boost the cost of oil.

However there is no need for this condition. The Acme Petroleum Company with their own huge storage tanks and tank cars are a reliable source of supply for the dealer. He can phone us and have his mixed, rush order filled within 24 hours.

Try us today. Eliminate supply-worry from your business.

(This is the twentieth of a series of informatory advertisements on the distribution problems with which the oil industry has to contend.)

ACME

Petroleum Company

Executive Offices: 624 S. Michigan Ave., Chicago

KANSAS CITY, MO. Land Bank Bldg.

DALLAS, TEXAS Magnolia Bldg.

OIL STORAGE PLANTS

Over 6,000,000 Gallons Storage

West Tulsa, Okla. Blue Island, Ill.

(Chicago Switching District)

19

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.08	.08¼	.07½	.07¾	.07½	.07¾
56-58 450 end point	.09¼	.09½	.08	.08¼	.07¾	.08
58-60 437 end point (U. S. Motor)	.09¾	.10	.08¾	.08⅝	.08	.08¼
60-62 400 end point	.11	.11¼	.09¾	.10	.09½	
64-66 375 end point	.12¾	.13¼	.11½	.11¾	.10¾	.11
68-70 350 end point	.13¼	.13½	.12¼	.12½	.11½	.11¾
KANSAS—						
58-60 437 end point (U. S. Motor)	.09¾	.10	.08½		.08	.08¼
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.07½	.07¾	.07¼	.07½	.07¼	.07½
50-52 440 end point (Naphtha)	.07¾	.08	.07½	.07¾	.07½	.07¾
56-58 450 end point	.09½	.09¾	.08¼	.08½	.07¾	.08
58-60 437 end point (U. S. Motor)	.10		.08½	.09	.08	.08¼
60-62 400 end point	.11¼	.11½	.10		.09½	.09¾
64-66 390 end point	.12¾	.13	.11¼	.11½	.10½	.10¾
64-66 375 end point	.13	.13¼	.11½	.11¾	.10¾	.11
68-70 360 end point	.13¼	.13½	.12¼	.12½	.11½	.11¾
NORTH LOUISIANA—						
56-58 450 end point	.09½	.09¾	.08½	.08¾	.08¼	.08¾
58-60 437 end point (U. S. Motor)	.10	.10¼	.09	.09¼	.08⅝	.08⅝
60-62 400 end point	.11¼	.11½	.10¼	.10½	.09¾	.10
64-66 390 end point	.12½	.12¾	.11½	.11¾	.10⅞	.11⅛
64-66 375 end point	.12¾	.13	.11¾	.12	.11⅛	.11⅜
ARKANSAS—						
58-60 450 end point	.09½	.09¾	.08¼	.08½	.08¼	.08½
58-60 437 end point (U. S. Motor)	.10	.10¼	.08¾	.09	.08½	.08⅝
64-66 375 end point	.13¼	.13½	.11¾	.12	.11¼	
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.13¼	.13½	.12¼	.12½	.12¼	.12½
PENNSYLVANIA—						
52 Naphtha	.11		.10½		.10¼	
54 Naphtha	.11¼		.10⅝		.10½	
56 Gasoline	.11½		.10¾		.10⅝	
58 Gasoline	.12		.11		.11	
60 Gasoline	.12½		.12		.12	
62 Gasoline	.13½		.12¾		.12¾	
64 Gasoline	.15		.15		.14½	
66 Gasoline	.15½		.15½		.15½	
68-70 Gasoline	.16½		.16½		.16½	
CALIFORNIA—						
54-56 437 end point (U. S. Motor) domestic	.09	.09½	.09	.09½	.09	.09½
CHICAGO DIST. (Based on Group 3)—						
50-52 450 end point (Naphtha)	.08¼	.08½	.07½	.08	.07	.07½
56-58 450 end point	.08¾	.09	.07¾	.08	.07½	.07¾
58-60 437 end point (U. S. Motor)	.09½	.09¾	.08¼	.08½	.08	.08¼
60-62 400 end point	.11	.11¼	.09½	.09¾	.09	.09¾
64-66 375 end point	.12¼	.12½	.11¼	.11½	.10¾	.11
68-70 360 end point	.13	.13¼	.12	.12¼	.11¾	.12

*Colorado points.

NATURAL GASOLINE

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.09½	.09¾	.09	.09¼	.09¼	
Grade A, 72-79.9, 375 ed point, rec. 90%	.09¾	.10	.09¼		.09¼	
Grade Double B, 84-92, 375 e.p., rec. 95%	.09		.08¼	.08½	.08¼	.08½
Grade B, 76-83.9, 375 end point, rec. 85%	.09	.09¼	.08½		.08½	.08¾
Grade C, 80-90, 375 end point, rec. 78%	.08½		.07¾	.08	.07¾	.08
NORTH TEXAS—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.09½	.09¾	.09	.09¼	.09	.09¼
Grade A, 72-79.9, 375 end point, rec. 90%	.09½	.09¾	.09	.09¼	.09	.09¼
Grade Double B, 84-92, 375 e.p., rec. 85%	.08¾	.09¼	.08½		.08¼	
Grade B, 76-83.9, 375 end point, rec. 85%	.08¾	.09¼	.08½		.08¼	
Grade C, 80-90, 375 end point, rec. 78%	.08½		.08		.07¾	.08
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 end point, rec. 90%	.09¾	.10	.09¼		.09¼	
Grade C, 76-82, 375 end point, rec. 85%	.09		.08½		.07¾	.07½
CALIFORNIA—						
68-80 absorption, 360-390 end point	.11	.11½	.11½	.12½	.11½	.12½
78-84 compression, 350 end point	.11½		.11½		.11½	
CHICAGO DIST. (Based on Group 3)—						
Grade Double A, 80-87.9, 375 e.p., rec. 90%	.09½	.09¾	.09	.09¼	.09	
Grade A, 72-79.9, 375 end point, rec. 90%	.09½	.09¾	.09	.09¼	.09	
Grade Double B, 84-92, 375 e.p., rec. 85%	.09	.09¼	.08¼	.08½	.08¼	.08½
Grade B, 76-83.9, 375 end point, rec. 85%	.09	.09¼	.08¼	.08½	.08¼	.08½
Grade C, 80-90, 375 end point, rec. 78%	.08½		.07¾	.08	.07¾	.08

MOTOR NATURAL GASOLINE (BLEND)

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
60-62 450 end point	.09	.09¼	.08¼	.08½	.08	
64-66 437 end point	.09¼	.09½	.08½		.08	.08¼
68-70 430-435 end point	.09¼	.09½	.08½		.08¼	.08½
NORTH TEXAS—						
58-62 440 end point	.09½		.08¼	.08½	.07¾	.08
58-60 450 end point	.09½		.08¼	.08½	.07¾	.08
PENNSYLVANIA—						
*60-62	.11½		.11½		.11½	
*64-66	.11¾		.11¾		.11¾	
*66-68	.12		.12		.12	
*68-70	.12		.12		.12	
CHICAGO DIST. (Based on Group 3)—						
60-62 450 end point	.09	.09¼	.08	.08¼	.07¾	.08
64-66 450 end point	.09	.09¼	.08	.08¼	.07¾	.08
68-70 437 end point	.09¼	.09½	.08¼	.08½	.08	.08¼

*At Sistersville, W. Va.

BURNING OIL

	Jan. 27		Jan. 20		Jan. 13	
KANSAS—						
41-43 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05		.05		.05	
42-44 water white Kerosene	.05¼		.05¼		.05¼	
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.07½	.07¾	.07½	.07¾	.07½	.07¾
NORTH TEXAS—						
41-43 water white Kerosene	.04¼	.04½	.04¼	.04½	.04⅜	.04½
41-43 prime white Kerosene	.04⅜	.04¼	.04½	.04¼	.04¼	.04⅜
40-42 prime white Kerosene	.04⅜	.04¼	.04⅜	.04¼	.04⅜	.04¼
42-44 water white Kerosene	.04⅝	.04¾	.04⅝	.04¾	.04⅝	.04¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04⅜	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝
42-44 water white Kerosene	.04½	.04¾	.04½	.04¾	.04⅝	.04⅝
40-41 prime white Kerosene	.04⅜	.04¼	.04⅜	.04¼	.04⅜	.04¼
ARKANSAS—						
41-43 water white Kerosene	.05	.05¼	.05	.05¼	.05	.05¼
42-44 water white Kerosene	.05¼	.05½	.05¼	.05½	.05¼	.05½
PENNSYLVANIA—						
43 Kerosene prime white	.07		.07		.07	
45 Kerosene water white	.07¼		.07¼		.07¼	
46 Kerosene water white	.07¾		.07¾		.07⅞	
47 Kerosene water white	.08		.08		.08¼	
34 Neutral	.09		.09		.09	
34 Sundebloomed Neutral	.07⅜		.07⅜		.07⅜	
36 Miners' Neutral	.06½		.06½		.06½	
300 Mineral Seal	.07½		.07½		.07½	
CALIFORNIA—						
40-42 water white (high burning test)	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 43-45 445 end point	.06	.06½	.06	.06½	.06	.06⅜
Engine distillate, 42-44 480 end point	.05½	.05¾	.05½	.05¾	.05½	.05¾
CHICAGO DIST. (Based on Group 3)—						
41-43 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
42-44 water white Kerosene	.04⅝	.04¾	.04⅝	.04¾	.04⅝	.05

*Colorado points.

FUEL OILS

	Jan. 27		Jan. 20		Jan. 13	
KANSAS—						
24-26 Fuel Oil	1.45	1.50	1.45	1.50	1.40	1.50
32-36 Gas Oil	.03¾	.03⅞	.03¾	.03¾	.03¾	.03⅞
38-40 Distillate	.04⅛	.04¼	.04⅛	.04¼	.04⅛	.04¼
OKLAHOMA (Group 3)—						
22-26 Fuel Oil (sellers' cars)	1.30	1.35	1.30	1.35	1.27½	1.32½
24-26 Fuel Oil (buyers' cars)	1.30	1.35	1.30	1.35	1.27½	1.32½
24-26 Fuel Oil (sellers' cars)	1.35		1.32½	1.35	1.30	1.32½
28-30 Fuel Oil (sellers' cars)	1.40	1.45	1.35	1.40	1.35	1.40
32-36 Gas Oil	.03¾	.03⅞	.03¾	.03⅞	.03⅝	.03⅞
36-38 Distillate	.03¾	.03⅞	.03¾	.03⅞	.03⅝	.04⅛
38-40 Straw distillate	.04	.04⅛	.04	.04⅛	.04	.04⅛
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.30	1.35	1.30	1.35	1.27½	1.30
26-30 Fuel Oil	1.35	1.40	1.35	1.40	1.35	1.40
32-36 Gas Oil	.03⅝	.03¾	.03⅝	.03¾	.03¼	.03⅝
36-38 Distillate	.03¾	.03⅞	.03¾	.03⅞	.03⅝	.04
38-40 Straw distillate	.04	.04⅛	.04	.04⅛	.04	.04⅛
NORTH LOUISIANA—						
18-20 Fuel Oil	1.30		1.30		1.30	1.40
32-36 Gas Oil	.03½	.03¾	.03½	.03¾	.03½	.03⅝
ARKANSAS—						
38-40 Distillate	.04¼	.04⅝	.04⅛	.04¼	.04⅛	.04¼
32-36 Gas Oil	.04	.04⅛	.03⅞	.04	.03⅞	.04
22-26 Refinery Fuel Oil	1.30	1.35	1.25		1.25	
GULF COAST (South Texas)—						
Gas Oil	.04½	.05	.04½	.05	.04½	.05
Fuel Oil	1.65		1.65		1.65	
PENNSYLVANIA—						
30-34 Fuel Oil	.06¼		.06¼		.06	
36-40 Fuel Oil	.06½		.06½		.06½	
CALIFORNIA—						
33-36 Distillate	.04	.04½	.04	.04½	.04	.04½
27-33 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
15-20 Fuel Oil (at tide water)	1.40		1.40		1.40	
CHICAGO DIST. (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars, Group 3)	1.35	1.40	1.32½	1.37½	1.35	1.40
22-24 (El Dorado)	1.35	1.40	1.30	1.35	1.35	1.40
18-20 (Smackover)	1.30	1.35	1.25	1.30	1.30	1.35
32-36 Gas Oil	.03⅞	.04	.03⅞	.04	.03⅞	.04
36-38 Distillate	.03⅞	.04	.04	.04½	.03⅞	.04
38-40 Straw distillate	.04	.04½	.04½	.04¼	.04⅜	.04¾

LUBRICATING OILS AND WAX

	Jan. 27		Jan. 20		Jan. 13	
OKLAHOMA (Group 3)—						
70-80 vis., 2½ color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
100 vis., 2 color, 20-25 cold test	.04½	.05	.04½	.05	.04½	.05
100 vis., 3 color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
150 vis., 3 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
180 vis., 4 color, 23-28 cold test	.08	.08½	.08	.08½	.08	.08½
180 vis., 3 color, 23-28 cold test	.08½	.09	.08½	.09	.08½	.09
200 vis., 3 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
200 vis., 4 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
220 vis., 3 color, 25-30 cold test	.11½	.12	.11½	.12	.11½	.12
220 vis., 4 color, 25-30 cold test	.10¾	.11½	.10¾	.11½	.10¾	.11½
240 vis., 3 color, 25-30 cold test	.13½	.14	.13½	.14	.13¼	.14
240 vis., 4 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13¾
280 vis., 3 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.07½	.08	.07½	.08	.07½	.08
180 vis., 6 color, 23-28 cold test	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
200 vis., 5 color, 23-28 cold test	.09	.09½	.09	.09½	.09	.09½
200 vis., 6 color, 23-28 cold test	.13	.13½	.13	.13½	.13	.13½
220 vis., 5 color, 25-30 cold test	.10	.10½	.10	.10½	.10	.10½
220 vis., 6 color, 25-30 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14¾
240 vis., 5 color, 25-30 cold test	.12	.12½	.12	.12½	.12	.12½
240 vis., 6 color, 25-30 cold test	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾
280 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
180-200 vis., S. R. green, 40-45 cold test	.08½	.09	.07½	.08	.07½	.08
180-200 vis., S. R. green, 40-45 cold test	.08½	.09	.07½	.08	.07½	.08

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

170-190 dark green, 40-45 cold test	.06½	.07	.06	.06½	.06	.06½
600, E filtered	.20	.21	.20	.21	.20	.21
190-200 vis. @ 210 "D" Bright Stock	.34		.34		.34	
200-210 vis. @ 210 "E" Bright Stock	.29		.29		.29	
150 vis. @ 210 "D" Bright Stock	.30		.30		.30	
150 vis., @ 210 "E" Bright Stock	.26		.26		.26	
Waxes:						
124-126 White Crude Scale Wax	.05⅛	.05¼	.05⅛	.05¼	.05⅛	.05¼
PENNSYLVANIA—						
150, 3 color	.21½		.21½		.21½	
180, 3 color	.24		.24		.24	
200, 3 color	.25½		.25½		.25½	
220, 3 color	.28		.28		.28	
600, steam refined	.23		.22½		.22½	
635, steam refined	.27		.26		.26	
650, steam refined	.29½		.28¾		.28¾	
600, Pennsylvania flash	.35		.34		.34	
630, Pennsylvania flash	.39½		.39		.39	
*550, E filtered	.23½		.23½		.23½	
*600, E filtered	.26½		.26¼		.25½	
600, E filtered	.25½		.25¼		.24¼	
600, D filtered	.32		.32		.32	
550, E filtered	.23		.22		.22	
550, D filtered	.27		.25		.25	
Pennsylvania Bright Stock	.41		.41		.38¾	
122-124 White Crude Scale Wax	.05¾		.05¾		.05⅝	
†122-124 White Crude Scale Wax	.05¾		.05¾		.05¾	

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06½	.07	.06½	.07	.06½	.07
No. 2 color, 100 vis., pale oil	.08½	.09½	.08½	.09½	.08½	.09½
No. 2 color, 150 vis., pale oil	.10	.11	.10	.11	.10	.11
No. 3 color, 200 vis., pale oil	.13	.14	.13	.14	.13	.14
No. 3 color, 300 vis., pale oil	.16	.17	.15	.16	.15	.16
No. 3½ color, 500 vis., pale oil	.18	.19	.17	.18	.17	.18
No. 3½ color, 750 vis., pale oil	.22½	.23½	.22½	.23½	.22½	.23½
No. 4½ color, 1200 vis., pale oil	.25½	.26½	.25½	.26½	.25½	.26½
No. 4½ color, 2000 vis., pale oil	.29	.30	.29	.30	.29	.30
No. 2 color, 150 vis., pale filtered	.20½		.20½		.20½	
No. 2 plus color, 200 vis., pale filtered	.22		.22		.22	
No. 2½ minus color, 300 vis., pale filtered	.25½		.25½		.25½	
No. 2½ color, 500 vis., pale filtered	.29½		.29½		.29½	
No. 2½ color, 750 vis., filtered	.39½		.39½		.39½	
No. 5 to 6 color, 200 vis., red oil	.11½	.12½	.11½	.12½	.11½	.12½
No. 5 to 6 color, 300 vis., red oil	.14½	.15½	.13½	.14½	.13½	.14½
No. 5 to 6 color, 500 vis., red oil	.15½	.16½	.15½	.16½	.15½	.16½
No. 5 to 6 color, 750 vis., red oil	.20½	.21½	.20½	.21½	.20½	.21½
CALIFORNIA—						
200 vis., 2½-3 color	.14½	.15½	.14½	.15½	.14½	.15½
300 vis., 2 -4 color	.16	.17	.16	.17	.16	.17
350 vis., 3½-4 color	.17½	.18½	.17½	.18½	.17½	.18½
400 vis., 4 -4½ color	.19	.20	.19	.20	.19	.20
Red Neutrals:						
200 vis., 4½-5 color	.13	.14	.13	.14	.13	.14
300 vis., 5 -6 color	.14	.15	.14	.15	.14	.15
400 vis., 5 -6 color	.16	.17	.16	.17	.16	.17
500 vis., 6 -6½ color	.17	.18	.17	.18	.17	.18
600 vis., 6½ plus color	.18	.19	.18	.19	.18	.19

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Jan. 27	Jan. 20	Jan. 13
U. S. Motor Gasoline, 58-60 437	.13	.13	.13
*Bunker Oil, 14-16 Be.	1.80	1.80	1.80
*Diesel Oil, 28-30 Be.	2.10	2.10	2.10
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 32-36 Be.	.05¼	.05¼	.05¼
41-43 Kerosene, prime white	.09	.08½	.08½

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Jan. 27	Jan. 20	Jan. 13
Motor Gasoline:			
58-60 Be. gravity, in cases	.28.15	.26.65	.26.65
U. S. Navy, in bulk	.14	.12½	.12½
Naphtha:			
60° F., 59-61 Be. gravity, in bulk	.16¾	.14¾	.14¾
60° F., 63-66 Be. gravity, in bulk	.18	.16	.16
60° F., 66-68 Be. gravity, in bulk	.19½	.17½	.17½
Kerosene:			
Standard white, 40-42 Be. grav., in bulk	.06½	.06½	.06½
Standard white, 40-42 Be. grav., in barrels	.13½	.13½	.13½
Standard white, 40-42 Be. grav., in cases	.16.9	.16.9	.16.9
Water white, 42-44 Be. grav., in bulk	.07½	.07½	.07½
Water white, 42-44 Be. grav., in barrels	.14½	.14½	.14½
Water white, 42-44 Be. grav., in cases	.17.9	.17.9	.17.9
†Lubricating Oils:			
Cylinder Stock, extra light filtered, 600, in barrels	.46½	.46½	.46½
Cylinder Stock, light filtered, 600, barrels	.40½	.40½	.40½
No. 1 white neutral, .878 spec. grav.	.43	.43	.43
No. 1 Summer Black, .895 spec. grav.	.18	.18	.18
No. 5 Bright Stock, .897 spec. grav.	.50½	.50½	.50½
Specs' "A" red oil, .897 spec. grav., 170 vis.	.21	.21	.21
No. 2 red oil, .903 spec. grav., 212 vis.	.22	.22	.22
No. 1 red oil, .905 spec. grav., 265 vis.	.23	.23	.23
Polar red oil, .906 spec. grav., 295 vis.	.25	.25	.25
Pale oil, "25", .899 spec. grav.	.20½	.20½	.20½
Pale oil, "28", .892 spec. grav.	.16	.16	.16
Paraffin Wax:			
120-122 a.m.p., per lb.	.06⅛	.06⅛	.06¼
125-127 a.m.p., per lb.	.06¼	.06¼	.06¼
130-132 a.m.p., per lb.	.06⅝	.06⅝	.06⅝
135-137 a.m.p., per lb.	.07½	.07½	.07½

†All lube prices in barrels.

LOS ANGELES EXPORT MARKET

	Jan. 27		Jan. 20		Jan. 13	
Kerosene water white	.05	.05½	.05	.05½	.05	.05½
U. S. Motor gasoline, 54-56, 437 end point	.08½	.09	.08½	.09	.08½	.09

CRUDE OIL PRICES

January 27.—The Sinclair Crude Oil Purchasing Co. added a new gravity, 41.6° and above, to its schedule for Mid-

(Continued on Page 253)

Arkansas and North Louisiana

Caddo, 38° and above	$1.60
35° to 37.9°	1.50
32° to 34.9°	1.40
Below 32°	1.25
Homer, 35° and above	1.35
33° to 34.9°	1.25
31° to 32.9°	1.15
Below 31°	1.00
Haynesville, 33° and above	1.25
Below 33°	1.15
El Dorado, 33° and above	1.25
Below 33°	1.05
Bull Bayou, 38° and above	1.40
35° to 37.9°	1.25
32° to 34.9°	1.10
Cotton Valley	1.10
De Soto	1.45
Crichton	1.25
Bellevue	1.50
*Stephens, Ark.:	
Below 25°	.85
25° and above	.95
Smackover:	
25° to 25.9°	1.10
26° to 26.9°	1.20
27° to 27.9°	1.25
28° and above	1.30

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	1.20
Salt Creek	1.10
Big Muddy	1.00
Mule Creek	.60
Grass Creek (light)	1.45
Elk Basin	1.45
Lance Creek	1.40
Osage	1.40
Cat Creek (Mont.)	1.45
Sunburst (Mont.)	1.05
Lost Soldier	1.03
Greybull and Torchlight	1.45
Hamilton Dome	.80

Lander based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Prairie Oil & Gas Co. and other major purchasing companies, except as noted:

Below 30°	$1.00
30° to 32.9°	1.1b
33° to 35.9°	1.35
36° to 38.9°	1.50
39° and above	1.60
Sinclair Crude Oil Purchasing Co.—	
39° to 41.5°	1.60
41.6° and above	1.85
Magnolia Petroleum Co.:	
Below 28°	$ .75
28° to 30.9°	1.00
*31° to 32.9°	1.15
Corsicana Heavy	.90
Mexia, Powell, Currie, Richland, Wortham	1.50

*33° gravity and above, same as Prairie.

Humble Oil & Refining Co.

Corsicana Light, Mexia, Powell, Wortham	1.50
Moran Crude:	
Below 30° gravity	$1.00
30° to 32.9°	1.15
32° to 35.9°	1.35
36° and above	1.50

North Texas, same as Prairie.

Wichita-Archer Counties and Moran, same as Prairie.

Gulf Coast

†Grade "A"	$1.50
†Grade "B"	1.25
Luling	.90
Laredo (Magnolia Petroleum Co.)	.75
Rockdale-Minerva (Milam County)	1.25
Calliham (Live Oak-McMullen)	1.15
*High Island	.85

*Posted by Sun Co.

†Following are the specifications for Gulf Coast crudes as posted by the Humble Oil & Refining Co.:

Grade "A"—Viscosity not less than 100 seconds at 100° Saybolt. Sulphur not over .4 per cent. Baume gravity not over 25 at 60° F.

Cold test of distillates having viscosity of 1,000 seconds at 100° F., A. S. T. M. method.

Grade "B"—Embraces all coastal crude which does not meet the test for "A" Grade crude.

***Somerset**

26° and above	.95
Below 26°	.85

*Posted by Grayburg Oil Co.

California

14° to 19.9°	$1.00
20° to 20.9°	1.01
21° to 21.9°	1.02
22° to 22.9°	1.03
23° to 23.9°	1.05
24° to 24.9°	1.07
25° to 25.9°	1.10
26° to 26.9°	1.13
27° to 27.9°	1.16
28° to 28.9°	1.19
29° to 29.9°	1.22
30° to 30.9°	1.25
31° to 31.9°	1.28
32° to 32.9°	1.31
33° to 33.9°	1.34
34° to 34.9°	1.37
35° to 35.9°	1.40
36° to 36.9°	1.46
37° to 37.9°	1.52
38° to 38.9°	1.58
39° to 39.9°	1.64
40° to 40.9°	1.70
41° to 41.9°	1.76
42° and above	1.82

Eastern States

Penna Grade Oil in New York Transit Lines	$3.35
Bradford District Oil in National Transit Lines	3.35
Penna Grade Oil in National Transit Lines	3.25
Penna Grade Oil in Southwest Pa. Pipe Lines	3.25
Penna Grade Oil in Eureka Pipe Line Lines	3.25
Penna Grade Oil in Buckeye Pipe Line Lines	3.25
Cabell Grade Oil in Eureka Pipe Line Lines	1.70
Corning Grade Oil in Buckeye Pipe Line Lines	1.70
Somerset Medium Oil in Cumberland Pipe Line Lines	1.80
Somerset Light Oil in Cumberland Pipe Line Lines	1.95
Ragland Grade Oil in Cumberland Pipe Line Lines	1.05
Lima	1.83
Wooster	1.70
Illinois	1.62
Indiana	1.63
Princeton	1.62
Plymouth	1.15
Waterloo	1.00
†Oil Springs, Canada	2.55
†Petrolia, Canada	2.48
*Western Kentucky, 36° and above	1.55
*Western Kentucky, 33° to 35.9°	1.45
*Western Kentucky, 32.9° and below	1.35
Cumberland, Barren and Monroe Counties (Kentucky), (Paragon Development Co.)	1.95

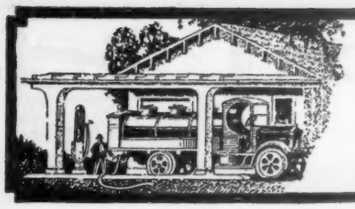
†Plus Government bounty of 26½c.

*Prices for Warren, Allen, Hancock, and Ohio Counties by Indian Refining Co. Prices for Warren and Simpson Counties by Paragon Development Co., same as Indian Refining Co.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$1.35
†Panuco (f.o.b. Mexican ports)	1.25
Tuxpam (New York)	1.99
Panuco (New York)	1.76

*Plus 33.00c tax. †Plus 20.00c tax. Prices based on contracts.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Jan. 27.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

Chicago District—

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
†100 gals. or more	15.0	..	18.0	11.0

Tank wagon prices on April 19, 1922: g. up 1¼c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10 g. down 1.4c; Dec. 29, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c.

Decatur, Ill.	15.2	...	17.2	11.5
East St. Louis	14.1	...	16.35	10.6
Joliet	15.4	...	17.4	11.7
Peoria	15.0	...	17.0	11.5
Quincy	15.1	...	17.2	11.3
Davenport, Ia.	15.5	...	17.5	11.9
Des Moines	15.5	...	17.5	11.9
Keokuk	15.5	...	17.5	11.9
Sioux City	15.0	...	17.0	11.5
Duluth, Minn.	16.5	...	18.5	12.6
Minneapolis	16.2	...	18.2	12.6
La Crosse, Wis.	16.2	...	18.2	12.4
Milwaukee	15.1	...	17.1	11.3
Madison	15.3	...	17.3	11.5
Detroit, Mich.	15.8	...	17.8	12.2
Grand Rapids	15.7	...	17.7	12.1
Saginaw	15.9	...	17.9	12.3
Evansville, Ind.	17.0	2.0	19.0	11.5
Fort Wayne	17.4	2.0	19.4	11.9
Indianapolis	17.2	2.0	19.2	11.7
South Bend	17.4	2.0	19.4	11.9
Fargo, N. D.	17.0	1.0	19.9	14.6
Huron, S. D.	19.0	2.0	21.0	13.1
Sioux Falls	17.0	2.0	19.0	12.6
*Kansas City, Mo.	17.9	3.0	18.9	10.8
*Springfield	17.8	3.0	19.8	11.2
*St. Louis	16.6	2.5	18.9	11.0
*St. Joseph	17.0	2.5	19.0	10.9
Wichita, Kans.	14.8	...	16.8	9.8
Bartlesville, Okla.	16.6	...	18.4	9.9

*State tax is 2c. Remainder is city tax.
†Tank wagon price on less than 100 gallons, 16c.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Newark, N. J.	16.0	...	....	13.0
Atlantic City	16.0	...	....	13.0
Annapolis, Md.	19.0	2.0	21.0	12.0
Baltimore	19.0	2.0	21.0	11.0
Cumberland	19.0	2.0	21.0	12.5
Washington, D. C.	19.0	2.0	21.0	12.5
Norfolk, Va.	21.0	3.0	23.0	13.5
Petersburg	21.0	3.0	23.0	13.5
Danville	21.0	3.0	23.0	13.0
Richmond	21.0	3.0	23.0	13.5
Roanoke	21.0	3.0	23.0	13.5
Keyser, W. Va.	19.0	2.0	....	13.5
Charleston	19.0	2.0	....	12.5
Parkersburg	19.0	2.0	....	13.5
Wheeling	19.0	3.0	....	13.5
Charlotte, N. C.	21.0	3.0	....	13.5
Hickory	21.0	3.0	....	13.5
Mt. Airy	21.0	3.0	....	13.5
Salisbury	21.0	3.0	....	13.5
Charleston, S. C.	21.0	3.0	....	14.0
Columbia	21.0	3.0	....	14.0

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
*Pittsburgh, Pa.	16.0	...	21.0	14.0
*Philadelphia	16.0	...	21.0	14.0
*Scranton	16.0	...	21.0	14.0
*Allentown	16.0	...	21.0	14.0
*Altoona	16.0	...	21.0	14.0
*Erie	16.0	...	21.0	14.0
Dover, Del.	18.0	2.0	21.0	14.0
Wilmington	18.0	2.0	21.0	14.0
Springf'id, Mass.	17.0	...	20.0	13.0
Worcester, Mass.	17.0	...	20.0	13.0
Boston	17.0	...	20.0	13.0
Providence, R. I.	17.0	...	20.0	13.0
Hartford, Conn.	18.0	1.0	21.0	13.0
New Haven Conn.	18.0	1.0	21.0	13.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
New Orleans, La.	18.5	2.0	20.5	11.0
Alexandria	18.5	2.0	20.5	13.0
Baton Rouge	17.0	2.0	19.0	11.5
Lake Charles	18.5	2.0	20.5	13.0
Shreveport	18.5	2.0	20.5	13.0
Memphis, Tenn.	18.0	2.0	20.0	14.0
Chattanooga	19.5	2.0	21.5	14.5
Knoxville	21.5	2.0	22.5	15.0
Knoxville	20.5	2.0	22.5	15.0
Bristol	21.0	2.0	23.0	13.5
Little Rock, Ark.	21.0	4.0	23.0	11.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Atlanta, Ga.	21.0	3.0	24.0	13.0
Augusta	21.0	3.0	24.0	13.5
Macon	21.0	3.0	24.0	14.5
Savannah	19.0	3.0	22.0	13.0
Birmingham, Ala.	19.0	3.0	22.0	14.5
Mobile	18.0	2.0	21.0	12.5
*Montgomery	20.0	3.0	22.0	15.5
Clarksdale, Miss.	19.0	3.0	22.0	12.0
Jackson	19.0	3.0	22.0	10.0
Natchez	18.5	3.0	21.5	11.5
Vicksburg	18.5	3.0	21.5	11.5
Jacksonville, Fla.	19.0	3.0	22.0	13.0
Miami	21.0	3.0	24.0	14.5
Pensacola	19.0	3.0	22.0	13.5
Tampa	19.0	3.0	22.0	13.0
Lexington, Ky.	19.0	3.0	22.0	14.0
Covington	16.0	3.0	19.0	14.0
Louisville	18.0	3.0	20.0	12.0

*In addition to the State tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosenes.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Dallas, Texas	13.0	1.0	16.0	10.0
Fort Worth	12.0	1.0	16.0	10.0
Houston	14.0	1.0	17.0	10.0
San Antonia	13.0	1.0	16.0	10.0
El Paso	16.0	1.0	18.0	11.0
Muskogee, Okla.	16.0	2.5	19.0	11.0
Oklahoma City.	16.0	2.5	19.0	11.0
Tulsa	14.0	2.5	17.0	10.0
Ft. Smith, Ark.	17.0	4.0	21.0	12.0
Little Rock	20.0	4.0	22.0	11.0
*Texarkana	19.0	4.0	22.0	10.0

*Does not include 1c additional tax.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Basin, Wyo.	17.0	1.0	....	14.0
Casper	15.0	1.0	17.0	12.0
Cheyenne	16.5	1.0	18.5	13.5
Cody	18.0	1.0	...	15.0
Lander	17.0	1.0	...	14.0
Albuquerque, N. M.	20.5	1.0	22.5	15.5
Salt Lake, Utah	20.0	2.0	22.0	17.0
Ogden	20.0	2.5	22.0	17.0
Denver, Colo.	14.0	2.0	16.0	13.5
Glenwood, Spgs.	20.9	2.0	...	17.5
Pueblo	14.0	2.0	16.0	13.5
Billings, Mont.	18.5	2.0	20.5	14.5
Butte	18.0	2.0	20.0	15.0
Great Falls	20.0	2.0	22.0	16.0
Helena	20.0	2.0	22.0	16.0
Miles City	19.5	2.0	21.5	16.5
Missoula	21.0	2.0	23.0	16.0
Boise, Idaho	21.5	2.0	23.5	19.0
Idaho Falls	21.0	2.0	23.0	18.5

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Albany, N. Y.	18.5	...	...	13.0
*New York	18.5	...	...	13.0
Buffalo	18.5	...	...	12.0
Rochester	18.5	...	...	12.0
Syracuse	18.5	...	...	13.0
Boston, Mass.	18.5	...	...	13.0
Providence, R. I.	18.5	...	...	13.0
Augusta, Me.	19.5	1.0	...	13.0
Manchester, N. H.	20.5	2.0	...	13.0
Burlington, Vt.	19.5	1.0	...	13.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

PACIFIC COAST DISTRICT

Standard Oil Co. of California

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
San Francisco	15.0	2.0	18.0	15.5
Los Angeles	13.5	2.0	16.5	15.5
Fresno	15.5	2.0	18.5	17.5
Reno, Nev.	18.5	3.0	21.5	19.0
Portland, Ore.	16.0	3.0	19.0	16.5
Seattle, Wash.	15.0	2.0	18.0	16.5
Tacoma	15.0	2.0	18.0	16.5
Spokane	19.0	2.0	22.0	20.5
Phoenix, Ariz.	21.0	3.0	24.0	21.5

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
All Ohio points	16.0	...	18.0	14.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Omaha	13.0	...	15.0	11.5
Crawford	16.0	...	...	12.25
McCook	16.75	...	18.75	13.00
Norfolk	15.75	...	17.75	12.00
North Platte	16.75	...	18.75	12.75
Scotts Bluff	16.25	...	18.25	12.25

TANK WAGON CHANGES

January 28.—The Standard Oil Co. of Nebraska advanced the gasoline tank wagon and service station market 1 cent in Nebraska.

January 27.—The Ohio Oil Co. advanced tank wagon and service station prices of gasoline 1 cent throughout its territory. The Standard Oil Co. of New Jersey advanced gasoline 2 cents in North and South Carolina, and Virginia, and 1 cent in West Virginia, Maryland and the District of Columbia.

January 27.—Standard Oil Co. of Louisiana advanced gasoline tank wagon and service station prices 1 cent in entire territory. Standard Oil Co. of Kentucky advanced gasoline tank wagon and service station prices 2 cents in entire territory with the exception of Kentucky, where advance was 1 cent.

January 26.—Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 1 cent in Texas and Oklahoma except Tulsa, where advance was 2 cents; same company advanced gasoline 1½ cents in Arkansas.

January 26.—The Sinclair Refining Co. advanced gasoline tank wagon price 1 cent throughout their entire territory from New Mexico through Ohio. The Standard Oil Co. of Indiana met this advance in its territory effective at noon. The Standard Oil Co. of New Jersey advanced export gasoline in bulk and cases a half cents, and all grades of export naphtha 1 cent.

January 24.—The Standard Oil Co. of Nebraska posted an increase of 1 cent in tank wagon price of gasoline throughout Nebraska; the Standard Oil Co. of New York, 1½ cents throughout its territory; and the Magnolia Petroleum Co. 1½ cents in Arkansas.

January 23.—The following advances in the tank wagon and service station prices of gasoline were posted:

The Atlantic Refining Co., 1 cent in Pennsylvania and Delaware; the Standard Oil Co. of New Jersey, 1½ cents in New Jersey and 2 cents throughout the remainder of its territory; the Standard Oil Co. of Louisiana 1½ cents in Louisiana, Tennessee and Arkansas; the Standard Oil Co. of Indiana, 1 cent in its entire territory.

January 19.—Continental Oil Co. reduced tank wagon and service station prices 2 cents at Pueblo, Colo., and Butte, Mont. The Standard Oil Co. of Kentucky advanced the kerosene tank wagon market 2 cents in Atlanta, Ga.

CRUDE PRICES

(Continued from Page 253)

Continent crude, advancing the price for that gravity 25 cents.

January 26.—The Paragon Development Co. increased the price of Cumberland, Monroe and Barren Counties crude 25 cents, effective January 23; same company also increased three grades of Western Kentucky crude 15 cents each, effective January 24.

January 24.—The Indian Refining Co. raised the price of three grades of Western Kentucky crude 15 cents each.

January 23.—The following price increases were posted throughout the country by the various crude purchasing companies: Smackover, Bellevue and Cotton Valley, 15 cents each; and all others grades in Louisiana and Arkansas, 25 cents each, by the Standard Oil Co. of Louisiana; Mexia, Powell, Wortham, and Corsicana light, 25 cents by the Magnolia Petroleum Co.; all Pennsylvania grades, Cabell, Somerset medium and Somerset light, 25 cents, Ragland 15 cents and Corning 20 cents, by the Joseph Seep Purchasing Agency; Wyoming crudes, including Grass Creek light, Elk Basin, Big Muddy, Lance Creek and Rock Creek, 25 cents by the Ohio Oil Co., and Osage, Cat Creek, Salt Creek, Lost Soldier, Greybull and Torchlight, 25 cents by the Midwest Refining Co.; Sunburst in Montana, 15 cents by the Ohio Oil Co. The Magnolia Petroleum Co. met the Prairie Oil & Gas Co.'s increase on all grades in Oklahoma, Kansas and Texas, above 32.9 degrees and rearranged its schedule for the lower gravities as follows: Below 28° $.75; 28° to 30.9,° $1; 31° to 32.9°, $1.15.

The Ohio Oil Co. advanced the price of Lima, Indiana, Illinois, Princeton, and Plymouth crudes 15 cents; Waterloo 10 cents and Wooster 20 cents. Imperial Oil, Ltd., advanced Canadian crude 15 cents.

January 22.—The Marland Refining Co. rearranged its gravity schedule for Oklahoma crude and increased its prices from 33 cents to 42 cents. The Prairie Oil & Gas Co. added a new gravity, 39° and above, and increased its price from 25 to 40 cents. The Humble Oil & Refining Co. raised its posted price on Mexia, Powell, Wortham, Currie and Richland crudes 25 cents and met the Prairie schedule on Ranger and North Texas crude, adding the extra gravity, and raising the prices 25 and 40 cents; but the new gravity was not added to the Moran crude schedule and the price raise was 25 cents.

The Ohio Oil Co. advanced the market price of Lima, Indiana, Illinois, and Princeton 10 cents, and Plymouth crude 25 cents. Canadian crudes, Oil Spring, and Petrolia, Canada, were raised 10 cents by Imperial Oil, Ltd.

January 20.—Standard Oil Co. of Louisiana changed from two to five price schedules in Smackover, Ark., with advances from 10 to 20 cents in the higher gravities.

January 20.—The three grades of Western Kentucky crude were increased 10 cents by the Indian Refining Co. and the Paragon Development Co.

January 3.—The Ohio Oil Co. advanced Wooster crude 10 cents and Waterloo crude 15 cents.

DINNER CELEBRATES NEW FISHER BUILDING

A monument to their 45 years of manufacture, the new home of the Fisher Governor Co. of Marshalltown, Iowa, was completed and occupied early this month. A dinner was given in celebration of the event, with all of the employes and officers of the company present, including several business friends of the company and distributors.

The dinner was described by M. F. Waters, Mid-Continent distributor for the company's products, as having been just a gold, old-fashioned family gathering, with everyone enthusiastic and having a good time. M. L. Abbott, an officer of the company, acted as toastmaster, and short speeches were made by several department heads and by C. B. Tompkins, who audits the firm's books periodically, and R. H. Heartman, who carries the insurance of the employes.

J. H. Fisher, president, made the concluding address. He had prepared a speech under the title "Realization," but was so overcome by happiness and emotion he was forced to resume his place at the table before having gone very far. To make the moment complete, a large floral horseshoe was presented Mr. Fisher by his employes.

TAKES OVER JENKINS PROCESS

CHICAGO, Jan. 27.—The Graver Corp. of this city has taken over the sale and manufacture of the Jenkins cracking process, according to an announcement made here today. The Graver Corp. has been a large manufacturer of tanks, stills and other refinery equipment for several years. The Jenkins process at the present time is being successfully operated at several refineries.

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CHICAGO LOOKS FOR FURTHER ADVANCE

(Continued from Page 251)

look a great deal better. In many of them 60 per cent of the advance is added to the price, so that contract price on deliveries made since the advance would be 15 cents more than before the happy event —happy so far as the seller of fuel oil is concerned.

Gas Oil Steady

Gas oil is moving steadily, but in rather limited quantities and the market shows no real change, the prices being the same as a week ago. The traders in fuel, gas oils and distillates are already beginning to see the end of the season of active demand and are rather cautious as to obligating themselves for the month or two that remains of the period of greatest consumption.

Lubs in Demand

The lubricating oil market is making an early start along the lines of last spring and summer when the demand for bright stocks in the West broke all records. The auto demand is responsible for this movement. The demand for bright stocks is active and refiners in several cases report they are sold up or close to that condition. Neutrals are rather quiet. In the East the demand for export is very good and steam cylinder stocks are stated to be rather scarce. The prices on the wanted oils and on auto oils are firm with an upward tendency, although keen competition prevails. Prices were generally withdrawn at the crude advance and new prices are from one-half to 1 cent higher. The new lists will be available here tomorrow or next day and advance information from leading refiners to their representatives is that prices will be marked up that amount.

MARLAND CO. CLOSES CONTRACT TO HUMBLE

The Marland Oil Co. has closed a contract for the sale of approximately 7,000,000 bbls. during the current year to the Humble Oil & Refining Co., covered by the company's purchases in the Big Lake Pool, in Reagan County, Texas.

Marland's investment in the Big Lake is about $500,000, represented by the 8-mile line, ten 80,000-bbl. tanks and seven 55,000-bbl. tanks. Some tanks are yet to be erected. Big Lake and Texon companies have an interest with Marland in a separate purchasing company formed to buy the crude. Big Lake producers get a minimum of $1.20 a barrel or the market, if higher. Humble pays for the oil at the cost price plus a charge of 20 cents a barrel to the purchasing and pipe line companies for gathering and storage charges. Marland has 350,000 bbls. of crude stored at Kemper and is moving 10,000 bbls. daily from the Big Lake Field.

The largest part of Marland's contracts for crude sales this year are with Standard Oil of New Jersey and its subsidiaries. New Jersey is to take 11,000,000 bbls., about 80,000 a day, part of which goes to the West India Refining Co.; Humble, another New Jersey subsidiary, takes the Big Lake crude; Marland's refinery will use about 4,000,000 bbls., resultant refined products being largely sold to New Jersey; Atlantic Refining takes 2,000,000 bbls.; Cosden & Co. is to get about 1,000,000 and British American Oil Co. of Canada about the same amount. All contracts are at the posted market at time of delivery with Marland getting the usual gathering and delivery charges for pipe line of 20 cents a barrel.

PHILLIPS PETROLEUM BUYS IN IBEX POOL

BRECKENRIDGE, Tex., Jan. 24.—Phillips Petroleum Co. is reported to have secured entire control of the Ibex Pool in Shackelford County by purchase of the holdings there of the Humble Oil & Refining Co., Eastland Oil Co. and Dunigan Co. Consideration was approximately $1,000,000.

The Ibex Pool is the source of the deep production in Shackelford County, but its oil production is samll and its chief value lies in the gas which is very rich in natural gasoline content. Phillips Petroleum which recently became the largest owner in the pool, through purchase of the Landreth holdings.

The transaction gives Phillips 1,500 acres from the Humble, 200 from the Eastland Co. and 160 from the Dunigan Co. Humble acreage has seven producing wells with about 350 bbls. of oil per day and there is one well each on the other tracts, making a total production of about 400 bbls. per day in the purchase. There is strong gas production, rich in gasoline and much proven territory undeveloped. This new purchase adjoins 1,800 acres recently bought from the Landreth company by Phillips.

Efforts are being made now to provide houses and office space here for field offices, which officials have announced will be established in Breckenridge.

Late Fields

(Continued from Page 28)

are a number of new producers that have not yet been classed as completions. Among these are the Simms Oil Co.'s No. 3 Carpenter, which is in sand at 1,031 to 1,039 feet and estimated good for 200 bbls. Also there are two wells on the Gambrell tract, 5 miles northwest of Olney in Young County that give promise of being good producers. One of these is The Texas Co.'s No. 1 Gambrell, now reported on the sand at 1,190 feet and setting casing to test. Murchison and others' No. 3 Gambrell is on top of the sand at 1,185 feet and said to be showing for production.

In South Archer the Petroleum Producers Co.'s No. 4 Hausler is reported a producer making an estimated 300 bbls. daily from the sand at 1,115 to 1,130 feet and Murchison and others' No. 6 Harmel is estimated to be making 200 bbls. from the pay level at 1,260 feet to 1,280 feet. Their No. 5 Wood is near a completion also. It is in the sand at 1,305 to 1,315 feet and is said to be good for 150 bbls. In the Swastika Pool in Archer County the Swastika Oil Co.'s No. 10 Neal is a producer estimated to be making 150 bbls. a day from the sand at 1,083 to 1,092 feet.

In Carson County of the Texas Panhandle the American Refining Co.'s No. 3 Burnett has reached a depth of 2,846 feet where it has encountered both oil and gas. At latest reports the well was spraying about 50 bbls. of oil a day. The formation is reported to be a sandy lime.

Flowing from the new deep sand at 2,275 feet at the rate of 25 bbls. per hour, the deep test of Bridwell, Heydrick & Palmer, in the northwest corner of Section 83, Stephens land, South Vernon Pool, Wilbarger County, adds deeper pay to the pool. This No. 3, after testing the usual 2,030-foot pay, failed to make a producer. Casing was pulled and drilling was continued. At 2,275 feet the new horizon was found, which, after penetrating some feet, made a number of flows.

Another development was the finding of a strong gas pressure in the Mutual Oil Co.'s test in Section 81, Block 14, about three-quarters of a mile east of the proven area. The sand was picked up at 1,230 feet, indicating a possible extension of the new shallow sand to the east.

Adams & Riley's No. 1 McClelland, a wildcat in Eastland County, was drilled 3 feet deeper and made one flow of five minutes. It is now shut down. Murchison and others' No. 4 Gambrell, north Young County, is on sand at 1,205 feet and estimated making 125 bbls.

GULF COAST

In the Orange Pool, the Rycade Petroleum Corp.'s No. 8-E Cow Bayou, which had been flowing 2,500 bbls. at 4,920 feet, "went dead" when an offset blew out. It is being rigged to go on the beam.

In Jim Hogg County, Buchanan & Bailey's No. 1 is making 300 bbls. and O. W. Killiam's No. 1 is flowing 250 bbls. by heads. The Witherspoon Oil Co.'s No. 2 is bailing, showing for a well, as is Kataelaman & Stalban's No. 1.

In Webb County, near Bruni, the Cole Petroleum Co.'s No. 6 is showing in a sand at 2,460 feet. Casing is being set for a test.

In Guadalupe County, north of the Luling Field, W. T. Rutledge's No. 1 Pryor is in the Edwards lime at 2,112 feet and setting casing. The Mid-Kansas Oil Co.'s No. 1, west of Seguin, was dry in the lime at 1,300 feet. Sights and others,' south of Seguin, is at 1,910 feet.

In Bexar County, the Dixie-Good Oil Co.'s joint No. 1, near Adkins, was dry in the Edwards lime at 2,320 feet and the derrick has been skidded 100 feet north for No. 2. It will be drilled to 1,400 feet.

In McMullen County, the San Bait Oil Co.'s No. 1 Shriner, will be deepened from 1,500 feet, where last week it showed for a gasser. The Humble Oil & Refining Co. has spudded in a test on 25,000 acres in the vicinity of Loma Alta. Geologists are working out a supposed structure, or series of structures in the county, within a zone 20 miles wide, extending from the northeast to the southwest.

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IRMA-WAINWRIGHT OPERATIONS IN 1924

(Continued from Page 118)

tion that these wells are on the same structure that is productive in Nos. 2 and 4 British Petroleums' wells. This does not mean that other interpretations are not possible; the writer is handicapped through absence of suitable outcrops for study to make a definite pronouncement.

British Petroleums' No. 3 Wells

During the summer in the course of drilling operations an oil sand was found and tested in British Petroleums' No. 3 well. This sand was cored and as the core showed 8 to 9 feet of sand and shale in all and showed sand streaks saturated with oil and even drops of oil in some of the shale "breaks" it was decided by the management to test this sand for oil. It was felt that the showing warranted the hope that oil might be present in sufficient quantity to make a well and in this opinion the writer concurred. When first drilled into, the sand showed a fair show of gas. Both Mr. Emmens, the superintendent at British Petroleums at that time, and the writer were of the opinion that this sand was not the "Credille sand," which is productive in British Petroleums' Nos. 2 and 4 wells, but was above the Credille. If it is the same sand the pitch to the northwest is very considerable and much more than the writer had supposed it would be.

Those in touch with the Wainwright Field know that the test on this sand was very disappointing. The well failed to come in when bailed and only showings of oil were obtained. Two factors at least may have some bearing on this result. The first is the fact that the sands giving the oil showing were separated by shale "breaks," and the second that the amount of gas produced by the test was less than what was anticipated from the original showing. It is known that the greatest propulsive force in bringing oil into a well is the gas absorbed in the oil. Under pressure the amount of this absorbed gas is considerable and it is the history of oil wells in general that once the gas is dissipated the flow of oil to the well practically ceases and the well becomes a non-producer, even though only a small part of the oil in the sand has been extracted. With this fact in mind, it is at once obvious that shale "breaks" in the sand preventing free migration of the oil and gas are decidedly detrimental to production. Consequently this sand with a number of shale "breaks" and less gas than anticipated from the original showing, at the time of discovery, failed to produce oil although oil was undoubtedly present. If this is the true explanation, the gas from the immediate vicinity of the well was soon dissipated, and from the rate at which the gas pressure fell off this seemed to be the case. After the gas close to the well was gone the shale "breaks" prevented migration of more from any considerable distance and in consequence the propulsive force to bring the oil to the well was lacking.

The failure of this sand to produce oil has been treated in some detail here because to many interested in the field failure was taken as an indication that there was no further chance of obtaining oil in this well at greater depth. It should be remembered in this connection that the sand tested for oil in this well may not be the Credille sand. If it is not, then this sand also failed to give oil or was not present in Nos. 2 and 4 wells.

British Petroleums has since deepened No. 3 well but no statement of the results has been given for publication.

Maple Leaf Wells

The drilling location of Maple Leaf Co. is L. S. 1, Section 24, Township 45, Range 8w of the Fourth Meridian. This is about 1 mile west of the Imperial (Fabyan) No. 1 well. The results of the drilling at No. 1 Maple Leaf well have already been stated. Since there has been so much gas found in the Imperial (Fabyan) well No. 1 and in Maple Leaf No. 1 well and much less comparatively in the British Petroleums' wells to the east, one of the objects of the accurate leveling along the Battle River Valley between these two areas was to get information on the structure which would account for this condition. In this the writer was not wholly successful, due to the difficulty of correlating the various exposures of rock. Gas ordinarily is expected high up on the structures and oil lower down, but it seems quite clear from the leveling that British Petroleums' wells are up the dip from Imperial No. 1 well, which in turn is up the dip from Maple Leaf No. 1 well. It is also quite evident from what information is available that the dip is not constant in direction for the whole distance between the two areas.

Two explanations have suggested themselves for the presence of less gas in the wells up the dip. The two general areas may be separated by a syncline or down-warp sufficient to stop the migration of the great volume of gas as far up the dip as the British Petroleums' wells; or the sands that contain the oil and gas at British Petroleums may be lenses entirely distinct from the sands that contain the large volumes of gas farther west. The sands are probably lenses, but in the drilling of British Petroleums' wells gas horizons were found at certain levels that correspond very closely to some of the gas horizons in the Imperial (Fabyan) well No. 1. The explanation of lensing does not, therefore, seem sufficient in itself to account for the separation of the two areas.

If a syncline or down-warp separates the two areas then its counterpart or an anticline must be present to the west of it in the vicinity of the Imperial (Fabyan) No. 1 well. The crest of this anticline, if such exists, would be east of the Imperial (Fabyan) No. 1 well, since the dip between the Imperial well and the Maple Leaf well is known. Since gas is present in such large amounts with relatively little oil in the Imperial well, gas alone would be expected in any well drilled nearer the crest of this supposed anticline. On this assumption of a syncline separating the two areas the best place in the western part to drill for oil would be down the dip from the Imperial well, and the Maple Leaf well is so located.

The data from the leveling between the British Petroleums' area and the Imperial Maple Leaf area are contradictory in part, but the interpretation of an anticline with axis east of the Imperial No. 1 well and a syncline still farther east satisfies all the levels except one. In view of the difficulty of correlation of small outcrops the interpretation put on the stratigraphic position of this one outcrop may be incorrect. No definite pronouncement can, however, be made unless further field studies are undertaken. It ought to be appreciated in this regard that in working out structure it is necessary to deal with small outcrops and with dips that are everywhere less than one degree. There is certainly some explanation which accounts for much less gas at the British Petroleums' wells than at the Imperial No. 1 and Maple Leaf No. 1 wells, especially since the British Petroleums' wells are up the dip. The separation of the two areas by a syncline such as has been outlined and for which there is considerable supporting field evidence seems at present to be the most plausible explanation.

Wainwright Syndicate Well

In dealing with the structure the British Petroleum Nos. 1, 2, and 4 wells the writer pointed out that the strike of the formations was about E. 30 S to E. 45 S. If a line be drawn on a map through Imperial (Fabyan) well No. 1 on this strike it will pass not far from the Producers Syndicate well to the west of the town of Wainwright. All points along the strike on a single stratum are, of course, at same elevation, so if the Wainwright Producers well is nearly on the strike of the Imperial (Fabyan) well No. 1 all elevations in the two wells should almost correspond. In working out the elevations the levels of the top of the two wells must be con-

(Continued on Page 268)

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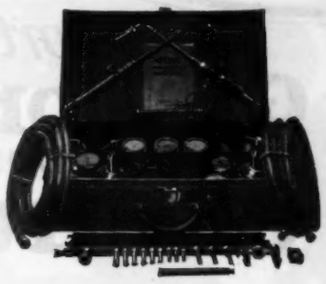

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REVIEW OF TECHNICAL PROGRESS IN PETROLEUM INDUSTRY IN 1924

The year 1924 was marked by notable progress being made in the solution of problems of a technical nature, of important and immediate bearing upon the petroleum industry and its relation to other industries to transportation and in connection with approved practices. Activities of the American Petroleum Institute covering particularly the problems handled through the technical department of which Dr. R. P. Anderson is the head and through technical committees were varied, and further important results in certain investigations and researches are expected this year.

Further progress was made in the motor fuel investigation being conducted jointly by the institute, the automotive industry and the Government." A nation-wide study is being made of apparatus for the determination of vapor pressure of gasoline as regards Interstate Commerce Commission regulations for transportation. An abridged table of multipliers for correcting the volume of petroleum products for temperature has been agreed upon and will soon be published. One of the most important questions now pending relates to fire regulations for the handling of the storage of petroleum products.

Motor Fuel Research

The joint motor fuel research program in which the Bureau of Standards, the National Automobile Chamber of Commerce, the Society of Automotive Engineers and the American Petroleum Institute are cooperating has been continued during the past year at the Bureau of Standards.

The problems of crankcase dilution, ease of starting, and others of similar nature have been studied in one phase of this work, and in another, a new method for the determination of the amount of crankcase dilution. A complete report of this work was presented at the last annual meeting of the institute and may be found in the proceedings.

Vapor Pressure of Gasoline.

Col. B. W. Dunn, chief inspector of the Bureau of Explosives, has recommended that the method of determining the vapor pressure of gasoline for transportation classification according to Interstate Commerce Commission regulations be changed to what is known as the Anderson method. Such a change involves not only the question of desirability of the new method but also necessitates a change in the pressure limits now prescribed by the existing regulations, in order that the same quality of gasoline can still be shipped.

As a result of this recommendation, the special technical committee of the American Petroleum Institute is now making a comparative study of the Anderson and the present standard apparatus for the determination of vapor pressure of gasoline, with the cooperation of the Bureau of Mines and the Bureau of Explosives. These tests are being carried out in various parts of the country under the direction of various regional chairmen as follows:

Eastern region (Pennsylvania, West Virginia, Ohio), H. C. Cooper.

Central and Rocky Mountain Region (Oklahoma, Kansas and Wyoming), D. E. Buchanan.

Gulf Coast region (Texas, Louisiana, Arkansas), B. L. Pillow.

Western region (California), J. B. Terry.

Comparative tests at representative plants in each region were made in November, 1924, and are to be made during the months of January, March, May, July, August and September, 1925, in order that the seasonal variations in the relationship between the two methods may be given proper consideration.

Abridged Table of Multipliers.

The institute's advisory committee on testing methods and specifications for petroleum and its products has had under consideration for some time, the problem of constructing an abridged table of multipliers for correcting the volume of petroleum products for temperature which would be satisfactory to the entire petroleum industry. Such a table was finally agreed upon at the last meeting of the committee held at Fort Worth at the time of the annual meeting of the institute, and was described as one of the group sessions of the meeting. It is expected that this abridged table will soon be published.

Regulations for Handling and Storage

The question of securing reasonable regulations for the handling and storage of petroleum products, particularly that phase of the problem dealing with the spacing of above-ground storage tanks, and the type and size of the fire-walls needed, has been the most important matter considered by the institute's committee on fire prevention and protection to life and property, during 1924. Uniform and reasonable regulations along this line are of importance to the petroleum industry in connection with the building of existing installations.

Principal attention has been given to a model ordinance for the handling and storage of flammable liquids including petroleum products, which has been under consideration by the committee on flammable liquids of the National Fire Protection Association. This committee, composed as it is of representatives of insurance interests, fire protection bureaus, city and State fire underwriters, and the petroleum industry, was not able to agree upon a table of distances for storage tanks for flammable liquids, and as an outcome of this disagreement there was authorized at the last annual meeting of the National Fire Protection Association a conference committee on flammable liquids storage to consider this question.

The institute's representative on this conference committee is W. R. Boyd, Jr., assistant general secretary and counsel of the American Petroleum Institute, and the other members are as follows:

G. S. Lawler, chief engineer inspection department Associated Factory Mutual Fire Insurance Cos.

B. W. Dunn, chief inspector, bureau of explosives.

John Kenlon, fire chief of New York, International Association of Fire Engineers.

W. E. Mallalieu, general manager National Board of Fire Underwriters.

At the last meeting of the committee on fire prevention and protection to life and property held at Fort Worth, at the time of the annual meeting of the institute, the problem of securing information on tank spacings, fire records, etc, for use by Mr. Boyd on this conference committee was considered and the matter was finally referred to a subcommittee consisting of:

H. L. Shoemaker, chairman, Standard Oil Co. (N. J).

F. A. Epps, Tide Water Oil Co.

R. J. Reed, Union Oil Co. of California.

This subcommittee plans to hold regional conferences of company officials and representatives of local oil organizations, in various centers such as New York, Chicago, Tulsa, Houston, etc., to discuss the question of securing complete information on tank fires for the past 10 years, and of compiling records as to present practice of the industry on tank spacing, fire wall construction, etc. When the necessary information has been collected, the subcommittee intends to study and analyze these data and submit its report to a general meeting of representatives of the oil industry for indorsement as the recommendation of the entire industry.

RETURN FROM TEXAS TRIP

R. A. Josey, president of the Josey Oil Co., has returned to Tulsa from San Antonio, Tex., where he was spending a few weeks.

DEMAND FOR STEEL IN 1924 WHILE GOOD WAS LESS THAN DURING 1923

By B. E. V. Luty

There was a considerable decrease from 1923 to 1924 in the consumption of steel by the oil industry, for 1923 had been an exceptionally heavy year in that respect, and 1924 was relatively an off year. It was an off year relative only to the average of immediately preceding years, for in steel consumption it stood far ahead of any year prior to 1916. There is no direct or simple relationship between the production of oil and the oil industry's consumption of steel. A large production of oil may be a reflection of the bringing in of several gusher fields, tending to restrict the sinking of wells in fields where the production per well is relatively small. At the same time heavy new production may produce a great demand for tankage, which makes an important consumption of steel in that connection. Later, again, long pipe lines may have to be laid to market the new production, and that makes a third class of steel consumption for the oil industry.

In the drililng of wells, moreover, there is not even an approximate figure, for general application, of the weight of casing, etc., required per well. A given field may show an average depth of well, but one field differs greatly from another, and then there are cases of old fields in which after a period of years of production the wells are sunk deeper.

Use Much Old Material

Even if the depths of wells showed a considerable degree of uniformity, the consumption of new material would not thus be indicated, for a study of drilling operations over a period of years shows that there is more second hand material used than new material. Casing is removed from dry holes more often than not from wells that are played out, local circumstances having much to do with the decision whether this would pay.

As a very rough estimate, it may be said that when 20,000 to 25,000 wells are drilled in a year, between 5,000 and 10,000 are equipped with new material, the remainder of the consumption being casing already used at least once.

The total weight of casing used in a well does not vary directly with the depth, as the deep wells start with heavier casings. To double the depth may be to triple the total weight of casing used. A rough guess may be made that all the wells drilled in a year, in all the fields would make an average of nearer 50 tons than 100 tons in the amount of casing per well. In addition there is a considerable quantity of tubing and pipe. Rotary drilling has been growing more and more common of late and while rotary drill pipe is used over and over again, it does wear out. As casing costs a trifle over $100 per net ton, the cost of casing alone would be nearer $5,000 than $10,000, and a great many wells are drilled with less cost of casing than that.

As to the total cost of a well, nothing precise can be given, but an observer, familiar with all fields, contributes the rough estimate that wells in Pennsylvania cost about $5,000; West Virginia, $10,000 to $25,000, as there is much variation in depths of wells in that section; Oklahoma, in the neighborhood of $20,000 and California anywhere between $50,000 and $100,000.

Tubular Goods Production

The total production of all oil country tubular goods is officially reported. All steel mills report their production statistics to the American Iron & Steel Institute, and the pipe mills report separately black standard pipe, galvanized pipe, these two being known in the trade as "merchant pipe," oil country goods, O. D. pipe and miscellaneous, and boiler tubes. The classification oil country goods necessarily includes some material used for exclusive gas wells, also gas pipe lines, but the proportion is relatively small. There is no division in the production statistics between casing, tubing rotary drill pipe and line pipe, and the proportions, no doubt, vary greatly.

The gathering of pipe mill statistics began with the year 1913, while the production statistics for 1924 will not be published for several months. For the years reported upon, the production of oil country goods has been as follows, the total output of welded tubular goods, inincluding merchant pipe, boiler tubes, O. D. pipe, etc., being given also, to indicate the proportion of the total pipe mill capacity that is devoted to supplying the direct needs of the oil and gas industry:

Pipe Mill Production—Gross Tons

Oil County Goods. All	Welded Tubular
1913 841,089	2,245,532
1914 619,291	1,737,704
1915 602,920	1,919,674
1916 940,491	2,651,058
1917 887,903	2,486,977
1918 794,769	2,290,479
1919 1,068,914	2,374,931
1920 1,261,778	3,002,725
1921 891,995	1,987,442
1922 1,139,834	2,732,236
1923 1,358,889	3,351,023

Production in 1924

Production of oil country goods in 1924 can be estimated only roughly. It was probably not far from 900,000 tons, which would be two-thirds as much as in 1923, but 1923 was the record high year. Of the decrease from 1923 to 1924 line pipe furnished a large part, for by a large margin 1923 was the record year in the laying of pipe lines. In 1924 there was scarcely any buying of line pipe until May, while in that month and June there was heavy buying, giving the pipe mills a good operation in line pipe from May to August, inclusive.

There was a moderate amount of tank storage installation last year, there being no particular rush of work at any particular time, but a steady line of business during the greater part of the year. The year 1920 was the first big year in oil storage, there being heavy buying of tankage in the fore part of the year. At that time the standard was the 55,000-bbl. tank, which takes about 125 tons of steel, nearly all plates. The top, generally made of heavy gauge blue annealed sheets, say 10 gauge, or of very light plates, does not take much steel. In the past couple years there has been a strong trend toward the 80,000-bbl. tank, which is merely a modification of the 55,000-bbl. tank, by an extra ring, of heavier plates, being inserted at the bottom. It requires about 225 tons of steel, so that with an increase of 50 per cent in the steel there is an increase of nearly 50 per cent in the capacity, and the total cost of the tank when installed, is of course, increased by considerably less than 50 per cent, so that there is an economy.

From the California Field there has been considerable demand for bolted tanks, which are of smaller capacity and are made of heavy gauge blue annealed sheets, lighter than plates. These tanks can readily be knocked down and set up elsewhere.

No statistics are available as to the amount of steel involved in tank storage, but a rough idea can be obtained from the fact that if all the reported stocks of oil east of California, in the neighborhood of 300,000,000 bbls., for a round figure, were in 55,000-bbl. tanks at 150 tons of steel per tank, the total would be over 800,000 tons of steel. In the past few years there has probably been an average of more than 100,000 tons of steel a year going into tank storage.

In the opinion of the pipe mills, 1925 will undoubtedly be a heavy year for oil drilling, and a large demand for casing, tubing, drill pipe, etc., is expected, representing a large increase over 1924 demand and possibly making a new record. As to line pipe business, that is not so easily predicted, but the pipe mills think there is a strong balance of probability that the year will be a fairly large one in line pipe, though not equaling 1923, which was an altogether exceptional year in that respect. A fairly steady demand for tankage is expected.

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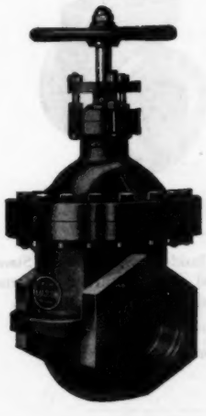

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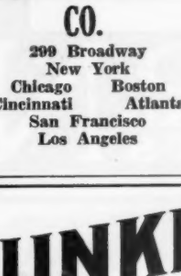

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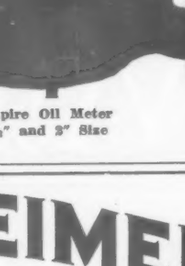

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CRUDE PRICE CHANGES IN ALL THE OIL FIELDS

(Continued From Page 65)

advanced Corsicana light crude to $1.40.

January 19.—Prairie Oil & Gas Co. advanced Oklahoma, Kansas and North Texas crudes of below 33° and 33° to 35.9° gravities 15 cents; 36° to 38.9° gravity 20 cents; and 39° and above gravity, 25 cents. Change met by all purchasing companies with the exception of the Magnolia Petroleum Co., which met the Prairie prices on crude above 33° gravity and advanced under 28° and 28° to 30.9° gravities 25 cents, and 31° and 32.9° gravity, 15 cents. Magnolia Petroleum Co. also advanced Corsicana heavy crude 25 cents, Corsicana light and Mexia crudes 20 cents. Seep Purchasing Agency advanced all grades of Pennsylvania crudes 25 cents. Cabell, Somerset light and Somerset medium crudes 15 cents. Ragland crude was advanced 5 cents; Indian Refining Co. advanced Western Kentucky light and heavy crudes 15 cents. Paragon Development Co. advanced Warren, Simpson, Cumberland and Monroe County, Kentucky, crudes 15 cents. Humble Oil & Refining Co. advanced Powell, Texas, crude 20 cents, and Currie, Texas, crude 25 cents.

January 21.—Standard Oil Co. of Louisiana advanced north Louisiana and Arkansas crudes 15 cents. Atlantic Oil Producing Co. advanced Stephens County, Arkansas, crudes 15 cents. Ohio Oil Co. advanced Elk Basin, Greybull and Torchlight, Grass Creek light and Lance Creek crudes 15 cents, Rock Creek crude 20 cents and Big Muddy 25 cents. Midwest Refining Co. advanced Salt Creek 20 cents. Osage and Cat Creek crudes were advanced 15 cents. Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo, and Wooster crudes 10 cents. Imperial Oil, Ltd., advanced Canadian crudes 10 cents.

January 22.—Standard Oil Co. of California advanced all grades of California crudes 25 cents.

January 25.—Humble Oil & Refining Co. advanced Gulf Coast crudes 15 cents. Other companies met this advance on the same day or the day following. Seep Purchasing Agency advanced all grades of Pennsylvania crude, Somerset light and medium crudes 25 cents, Corning and Cabell crudes 15 cents and Ragland crude 10 cents. Indian Refining Co. advanced Western Kentucky light and heavy crudes 25 cents. Paragon Development Co. advanced Warren, Simpson, Cumberland and Monroe Counties (Kentucky) crudes 25 cents.

January 30.—Joseph Seep Purchasing Agency advanced all grades of Pennsylvania crude 25 cents, Somerset crudes, medium and light, 15 cents. Indian Refining Co. advanced Western Kentucky light and heavy crudes 15 cents, Paragon Development Co. advanced Warren Simpson, Cumberland and Monroe County, (Kentucky) crudes 15 cents.

February 2.—Prairie Oil & Gas Co. announced a five-gravity schedule for Oklahoma, Kansas and North Texas crudes with a price advance of from 15 to 25 cents on all schedules above 30-degrees gravity. Changes met by other purchasing companies. Magnolia Petroleum Co. for the same area advanced its five-gravity schedule from 15 to 25 cents. Same company advanced Corsicana heavy and light and Mexia crudes 25 cents. The Texas Co. advanced Currie crude to $2. Humble Oil & Refining Co. advanced Currie, Mexia and Powell crudes 25 cents.

February 4.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 20 cents. Midwest Refining Co. advanced Salt Creek crude 25 cents. Canadian crude advanced 20 cents.

February 5.—Standard Oil Co. of California advanced California crudes, all fields, from 15 to 39 cents. Ohio Oil Co. advanced Elk Basin, Grass Creek light, Big Muddy, Rock Creek, Mule Creek, Greybull and Torchlight, Lance Creek and Sunburst crudes 25 cents. Cat Creek advanced 25 cents.

February 6.—Standard Oil Co. of Louisiana advanced all grades of North Louisiana and Arkansas crudes 20 cents, except Bellevue, which was advanced 25 cents.

February 13.—Corning crude advanced 15 cents.

March 8.—Prairie Oil & Gas Co. advanced Mid-Continent crudes 10 to 25 cents per barrel. Changes were met by other purchasing companies. Magnolia Petroleum Co. advanced 28 to 30.9 gravity grade 5 cents and 31 to 32.9 grade 15 cents, meeting Prairie prices on three higher grades for same area. The same company advanced Corsicana light and Mexia crudes 15 cents. The Humble Oil & Refining Co. advanced Currie crude 25 cents, and Mexia and Powell crudes 15 cents. The Ohio Oil Co. advanced crudes of the Central West 15 cents. Imperial Oil, Ltd., advanced Canadian crudes 15 cents.

March 10.—Paragon Development Co. advanced Warren, Simpson, Cumberland and Monroe County, Kentucky crudes 50 cents. Joseph Seep Purchasing Agency advanced Corning crude 20 cents and advanced Cabell and both Somerset grades 15 cents; Ragland crude was advanced 10 cents. The Ohio Oil and Midwest Refining Co. advanced Wyoming and Montana crudes 15 cents, except Sunburst, Montana, and Greybull and Torchlight crudes, 10 cents.

March 11.—The Standard Oil Co. of Louisiana advanced the various grades of Caddo, Homer, Haynesville, El Dorado, Bull Bayou, De Soto and Crichton crudes 15 cents. The Indian Refining Co. advanced Western Kentucky light and heavy crudes 15 cents.

March 20.—Humble Oil & Refining Co. advanced Grade "A" Gulf Coast crude 15 cents and Grade "B" Gulf Coast crude 10 cents. Changes met by other purchasing companies.

April 1.—Humble Oil & Refining Co. advanced both grades of Gulf Coast crude 20 cents. Changes met by other purchasing companies. The Texas Co. advanced Smackover crude 10 cents on all grades except that below 24 gravity, thus meeting the Standard Oil Co. (Louisiana) prices in all except the lowest grades, which remains at 85 cents, while the Standard's price is $1.

April 3.—Standard Oil Co. of Louisiana advanced Bellevue crude 20 cents.

May 1. —Paragon Development Co. advanced crudes in Warren and Simpson Counties, Kentucky, 6 cents.

May 10.—Magnolia Petroleum Co. reduced prices for crudes purchased on gravity scale in Oklahoma, Kansas and Texas, from 5 to 25 cents, except crude below 28° gravity which was unchanged. Magnolia reduced price for Mexia crude 25 cents and also reduced price for Corsicana light crude 25 cents. Latter reductions were met by Humble Oil & Refining Co. same date, which also reduced Currie 25 cents; and Ranger from 10 to 25 cents. Indian Refining Co. reduced West Kentucky light and heavy crudes 31 cents each. Paragon Refining Co. reduced crude in Warren and Simpson Counties, Kentucky 31 cents. Paragon Refining Co. reduced crude in Cumberland and Monroe Counties 25 cents. All grades Pennsylvania oil, Cabell, Somerset medium and Somerset light crudes were reduced 25 cents.

May 19.—Humble Oil & Refining Co. posted prices effective before reduction of May 10. Humble prices are retroactive as of May 10. Atlantic Oil Producing Co. reduced price of Smackover crude below 24° gravity 15 cents.

May 27.—New classification posted by Indian Refining Co. for Warren, Allen, Hancock and Ohio Counties, in Kentucky follows: Crude, 32.9 gravity and below, $1.85; 33 to 35.9 gravity, $1.95; 36 gravity and above, $2.05. Paragon Development Co. followed Indian classification and prices on crude in Warren and Simpson Counties, Kentucky. It did not change prices on crude in Cumberland and Monroe Counties.

June 6.—Magnolia Petroleum Co. reduced prices for crudes in Oklahoma, Kansas and Texas where purchased on a gravity basis from 10 to 50 cents. Magnolia Petroleum Co. reduced prices for Mexia crude 25 cents. Magnolia Petroleum Co. reduced price for Corsicana

light crude 25 cents and Corsicana heavy crude 10 cents.

June 10.—Standard Oil Co. (Louisiana) reduced prices on Smackover crude 15 cents.

June 14.—Standard Oil Co. (Louisiana) posted price of $1 per barrel on Cotton Valley crude. Joseph Seep Purchasing Agency reduced all grades Pennsylvania oil 50 cents; Cabell, Somerset medium and Somerset light were reduced 25 cents; Ragland crude was reduced 10 cents. Paragon Development Co. reduced Cumberland and Monroe County (Kentucky) crude 25 cents.

June 16.—Joseph Seep Purchasing Agency reduced Corning crude 25 cents. Indian Refining Co. reduced three grades of Western Kentucky crude 30 cents. Ohio Oil Co. reduced Wooster crude 15 cents.

July 1.—Magnolia Petroleum Co. advanced price for Luling, Texas, crude 25 cents. Sinclair Crude Oil Purchasing Co. announced it would run and pay for only 50 per cent of the average output from the wells to which it was connected, storing the remaining 50 per cent. Prairie Oil & Gas Co. announced it would confine its purchases to the amount of its shipments.

July 7.—The Joseph Seep Purchasing Agency reduced prices for Bradford and Allegany, Pennsylvania crudes 50 cents and other Pennsylvania crudes 25 cents. Cabell and Somerset medium were reduced 10 cents and Somerset light was reduced 15 cents. Ohio Oil Co. reduced prices for Lima, Indiana, Illinois, Princeton, Plymouth and Waterloo crudes 10 cents. Imperial Oil Co., Ltd., reduced the price of Petrolia and Oil Springs crude 10 cents.

July 8.—Paragon Development Co. reduced price for crudes in Cumberland and Mnoroe Counties, Kentucky, 15 cents. Humble Oil & Refining Co. reduced price both grades Gulf Coast crude, Mexia, Powell and Corsicana Light, Ranger 25 cents.

July 9.—Standard Oil Co. (Louisiana) reduced all grades Arkansas and North Louisiana crudes 25 cents per barrel, except Smackover, which was reduced 15 cents and Cotton Valley, which was reduced 10 cents.

July 12.—Sinclair Crude Oil Purchasing Oil Co. eliminated grade above 39 degrees gravity in purchasing Mid-Continent crude, making top price $2 for all crude 36 degrees gravity or above.

July 15.—Sinclair Crude Oil Purchasing Co. establishes a three-grade schedule, eliminating grade 36° gravity and above, making the highest grade, 33° and above, $1.75.

July 17.—The Texas Co. adopted the Sinclair Crude Oil Purchasing Co.'s four-price schedule for Oklahoma, North and Central Texas. Prairie Oil & Gas Co. adopted the Sinclair Crude Oil Purchasing Co.'s three-grade crude price schedule for Oklahoma, Kansas, North and Central Texas oils, making a reduction of 50 cents for oils 39 gravity and above and a reduction of 25 cents for oils 36 gravity and above. Prairie instituted new purchasing policy, paying cash for 50 per cent and agreeing to buy remainder within one year. Price schedule adopted by several other Mid-Continent purchasers. Indian Refining Co. and Paragon Development Co. reduced prices of three grades Western Kentucky crude 10 cents per barrel. Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 10 cents. Imperial Oil Co., Ltd., reduced Petrolia and Oil Springs, Canada crudes 10 cents. Humble Oil & Refining Co. posted five-grade schedule for North Texas crudes, ranging from $1 to $1.75. The same company posted a price of $1.50 for Wichita and Archer County oils, the initial quotation by that company. Humble reduced Mexia and Powell crudes 25 cents; Currie crude 50 cents. Grade A Gulf Coast crudes 25 cents and Grade B 15 cents. Most of these changes were met by remaining companies on same date.

July 18.—Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 25 cents with the exception of Sunburst, Mont., crude which was reduced 7 cents.

July 19.—Standard Oil Co. of Louisiana reduced various grades Arkansas and North Louisiana crudes 25 cents except Smackover and Cotton Valley which were reduced 10 cents. Other purchasers followed same date. Atlantic Oil Producing Co. reduced various grades of Stephens crude 15 cents.

July 25.—Indian Refining Co. and Paragon Development Co. reduced three grades of Western Kentucky crudes 10 cents.

July 26.—Magnolia Petroleum Co. adopted four-gravity schedule where it buys crudes on gravity basis in Kansas, North Texas and Oklahoma, with a reduction of the higher gravities of 10 and 25 cents. Same company reduced Mexia and Corsicana crudes 10 cents. Other major buyers did not meet Magnolia schedule.

July 26.—Magnolia Petroleum Co. reduced Luling crude 10 cents. Owens Refining Co. reduced Rockdale-Minerva crudes 25 cents.

July 28.—Prairie Oil & Gas Co. reduced Oklahoma, Kansas and North Texas crudes from 15 to 25 cents. Reductions met by other major purchasers, except as noted in tables. Humble Oil & Refining Co. dropped schedule of 39° and above in North Texas.

July 28.—Grayburg Oil Co. established four-gravity basis for Somerset, Texas, crudes with lower prices.

July 29.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth and Waterloo crudes 25 cents. Imperial Oil, Ltd., reduced Canadian crudes 25 cents.

July 29.—Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 15 cents with the exception of Sunburst, Mont. The reduction at Sunburst was 5 cents.

July 30.—Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 10 cents except Sunburst, where reduction was 3 cents. Ohio Oil Co. reduced Wooster crude 25 cents.

August 2.—Indian Refining Co. and Paragon Development Co. reduced Western Kentucky crudes 5 cents. Corning crudes reduced 15 cents.

August 5.—Paragon Development Co. reduced Cumberland and Monroe County crudes 15 cents.

August 5.—Joseph Seep Purchasing Agency reduced all grades Pennsylvania crude 25 cents; Cabell, Somerset medium and Somerset light were reduced 15 cents; Ragland was reduced 10 cents.

August 8.—Paragon Development Co. and Indian Refining Co. reduced Western Kentucky crudes 10 cents.

August 9.—Major purchasing companies reduced Gulf Coast crudes 15 cents. Humble Oil & Refining Co. reduced Mexia, Powell, Currie and Archer and Wichita County crudes 15 cents. The Texas Co. met Humble prices in Mexia and Currie.

August 20.—Imperial Oil, Ltd., advanced Canadian crudes 25 cents.

August 21.—Joseph Seep Purchasing Agency reduced Bradford-Allegany crudes 15 cents.

September 6.—Corning crude reduced 10 cents.

September 13.—Ohio Oil Co. reduced Lima, Indiana, Illinois, Princeton, Plymouth and Wooster crudes 10 cents and Waterloo crude 20 cents. Imperial Oil, Ltd. reduced Canadian crudes 10 cents.

September 17.—Prairie Oil & Gas Co. reduced Oklahoma, North Texas and Kansas crudes 25 cents. Changes met by other major purchasing companies except as noted below. Empire Pipe Line Co. adopted Prairie schedule, including the south Oklahoma pools, where it has previously been buying on the same price basis as the Magnolia Petroleum Co. Latter company did not change its prices. Humble Oil & Refining Co. reduced Gulf Coast, Mexia, Currie, Richland and Powell crudes 10 cents. Other companies met Humble prices in the Gulf Coast area. The Texas Co. met Humble prices in Currie and Powell.

September 18.—Ohio Oil Co. reduced Indiana, Illinois, Princeton, Plymouth, Waterloo, Wooster and Lima crudes 15 cents. Humble Oil Co. reduced Ranger,

(Continued on Page 269)

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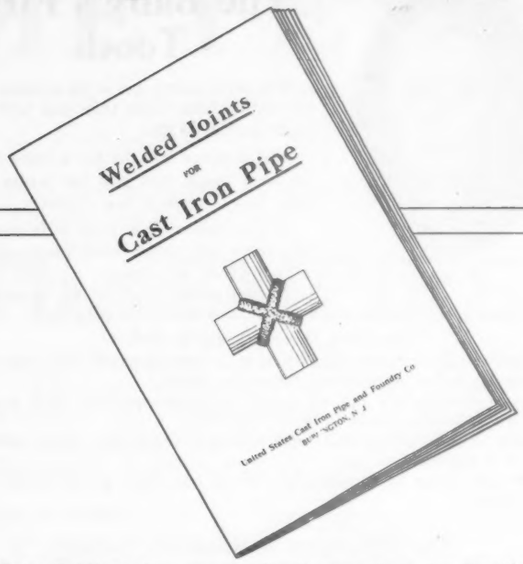

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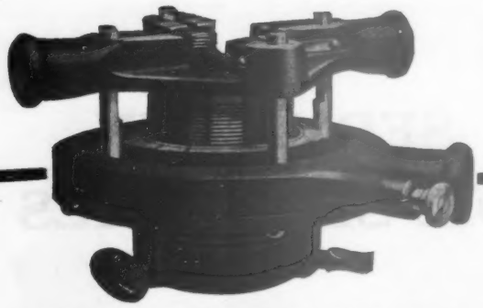

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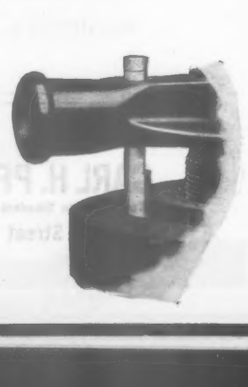

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CONSTRUCTION OF CHIMNEY IMPORTANT

(Continued From Page 249)

saturated steam in superheating it is theoretically all gain. For example, the volume of 1 pound of saturated steam at 165 pounds pressure (absolute) is 2.75 cubic feet and its temperature is 370 degrees Fahrenheit. The number of heat units of this pound of steam above 32 degrees Fahrenheit (freezing is 1,195 B.t.u. Now, add 107 B.t.u. to superheat it. The temperature will increase to 570 degrees Fahrenheit (superheated 200 degrees Fahrenheit). Its volume then is 3.68 cubic feet (specified heat taken as 0.54). An increase of 9 per cent in heat (fuel) has increased the volume 34 per cent, which means a corresponding increase in energy.

It must be remembered, however, that this theoretical advantage of superheating is indeed much greater than the advantage obtained in actual practice. No such general rule can be laid down in practice to ascertain the extent of saving effected because of the great number of variable factors entering in. Each installation must be considered by itself. Items that enter in are character of service required, nature and cost of fuel, piping, first cost, upkeep, size and type of plant. Especially, is this true if it is contemplated to change over from saturated steam to superheated steam.

Degree of Saturation

A moderate degree of saturation, 100 degrees to 300 degrees Fahrenheit, will undoubtedly be of great value in a refinery. This will insure dry steam at most remote parts of the plant, where long steam lines are used. At the same time it will increase the efficiency in terms of the fuel consumption. It will also make it possible to operate with smaller steam lines.

To go much in excess of the above mentioned degree of superheating will bring on objectionable features, such as burning out of lines, warping of slide valves, in pumps and engines and to compensate for this means expensive installations. If carried to too high a degree, there is an actual loss of energy in that more heat is applied to the steam than can be used in the operating parts.

Various designs of construction of superheaters are used. In general, the saturated steam is produced in the usual manner first. It is then taken back through a number of small pipes in some part of the furnace or flue. In water tube boilers these superheaters are generally placed between the tubes and drums or between the layers of tubes as shown in Figure 7. In return tubular boilers, they are generally installed under the rear arch where the furnace gases start their return through the boiler, as shown in Figure 8.

Superheaters, as shown in Figure 9 can be applied to the ordinary boiler even after such boiler has been in operation for a period of time, making saturated steam. But, to insure efficient opration they must be properly designed to fit the conditions of the boilers and steam plant in general.

Independently fired superheaters are also used in rare cases. Here the superheater coils are installed in a separate furnace and fired as a distinct unit.

Steam Separators

Where no superheaters or inadequate heaters are used and especially in long steam lines there is a great deal of condensation takes place in the lines after the steam leaves the boiler. This condensate (water) in the steam is a material objection. It possesses no power and serves to lessen the power of the steam itself.

Steam separators are used to remove this water. There are several types of these, namely: Reversed current, centifugal and baffle plated.

In the reversed current type, the steam suddenly changes direction. The water being heavier travels on anl by its own momentum is thrown into a receptacle, thus being removed from the steam.

The centrifugal type causes the steam to travel in a rotary path. The centrifugal force on the water in its rotary motion causes the water to be thrown away from the steam and in this way removed.

Corrugated or perforated baffle plates are used in the baffle type. These plates catch the water and allow the dry steam to pass on.

Whatever the type of separator in use, in order to be efficient, it must be designed to eliminate the water easily without causing any appreciable friction to the steam, it should have large enough storage capacity to take care of any sudden influx of water, it should be simple and durable and remove practically all of the moisture from steam containing under 10 per cent of condensation or all but 2 per cent from steam carrying up to 20 per cent of condensation.

Separators should be located as near as convenient to the point where the steam is to be used.

Steam Traps

In order for the water to be carried away from the separator steam traps are used. These do their work automatically. On steam lines where the pipe itself virtually forms a separator, for example, a long main steam line, where the lateral lines are at a higher elevation, or a line that makes a right angle upwards, traps may be used in places of separators. They are used a great deal on small lateral lines, being placed in some position in the line where condensate collects. There are two types of these in general use, namely: Bucket and float. Other types that are rarely used depend upon the expansion of metals and the working of a diaphragm.

Figure 10 represents the bucket type. When the trap is empty, the momentum of the steam entering from the bottom, forces the bucket, A, upwards and closes the port, P. As the water enters the trap, it fills up the trap and bucket from the bottom, maintaining the same level in each, there being a very small vent in the top of the bucket. When the water level attains a certain height in the bucket, it sinks, allowing the port to open and the force of the steam blows the water out and the port is again closed, due to the momentum of the steam entering.

In the float type, a float rests upon the water entering the trap. When the trap fills to a certain level, the float, actuating a lever, or by other means, opens a port which releases the water. After the water has been blown out, the float drops and again closes the port.

Cost of Power

Complete daily, monthly and yearly records should be kept of all plant performances. In order to ascertain the cost of operation, this should be done diligently. These records should include: fuel used, recording pressure charts, CO_2 recording charts, water used, cost of treating feed water, and heating same, oils used and the cost of repairs and maintenance.

These records should not be made and then filed away but should be studied. A comparison from day to day, month to month, and year to year will make it possible to reduce losses, increase the efficiency and decrease the cost per units of steam used.

The writer wishes to express his appreciation for valuable suggestions obtained from the following: Chaplin Fulton Manufacturing Co., the Sims Co., Edward Soph Co., George B. Allen Co.; Quigley Furnace Specialties Co., John W. Hayes Corp., The Heine Boiler Co., The Brown Instrument Co., Celite Products Co., and Babcock & Wilcox.

CONSERVATION BOARD CREATION IS EPOCHAL

(Continued From Page 220)

"It is truly an American industry, for no matter where on the globe oil is produced, Americans are there. Our leadership is recognized and our practices are followed. My conviction is that if our Government had owned the oil the restrictions upon development and the lack of incentive would have been such that we would not know today

value or uses of petroleum or how or where to find it."

Regarding Governmental regulation and the matter of town-lot drilling Mr. Beaty said: "Shall we have Governmental regulation? The answer is: We do not need it. I am speaking in the broad sense, and am thinking of price fixing and things of that kind. There are a few places at which uniform regulation, worked out by those who are familiar with the subjects, would be salutary. One of these is where the producer in his greed commits waste at the wells or in storage.

"We need rules of conduct and an umpire of the game at these points. There is nothing radical or alarming in the idea. Some of the oil producing States have taken notice of wasteful practices and have acted to prevent them. The enactments passed in many cases have been crude and sometimes unworkable. This has been due to the fact that those skilled in the business did not take the lead or point the way. Town-lot drilling and line crowding are things to fret about, and doubtless something on that score might be done. It is an outrageous species of competition, worse in principle than selling below cost, when one is forced to drill a well to each acre in order to get his proportion of oil in the pool when a well to 10 acres would suffice. Among serious operators there is not much difficulty on either of these accounts, because they usually rise to the occasion and do what is right; it is the reckless operator, who is usually a stock selling promotor, that needs curbing."

Mr. Doherty's Proposal

Henry L. Doherty, president of H. L. Doherty & Co., whose agitation for remedial action probably contributed largely to the developments culminating in the appointment of the oil board, advocates a change of laws under which the producing industry works. Mr. Doherty has made no public statement regarding the appointment of the board but that he believes it presages legislative measures intended to remedy some of the present problems is well known. In a recent address Mr. Doherty said:

"When petroleum was first discovered it must be quite plain to every one that there could be no laws prescribing how it should be produced or how the ownership should be determined. It was believed in the early days by many to represent an underground flowing stream of oil. The courts were forced to make the best decision they could and that is the way our laws were made under which petroleum is produced, and while on the face of it, it could be argued that it was intended that these laws should be made in conformity with the laws governing all other forms of property, nevertheless, in the last analysis, oil or gas belongs to the man who can capture it, and this means that we have absolutely no control over our production and that we are the only business that does not have any control over its production. Other mineral products are located and blocked out but are only removed from their ground reserves as the market requires them. The discovery of an oil pool results in a frenzied effort to exhaust this deposit as rapidly as is humanly possible and without regard to whether the market needs this oil or even whether the market can absorb it, and on the other hand, this means that we never have any real ground reserves of oil on which we can draw in case of need."

Chairman Bedford's Opinion

A. C. Bedford, chairman of the board of the Standard Oil Co. (New Jersey), believes the appointment of the Federal Oil Board gives the industry an opportunity to work out a means of practical cooperation with the Government which he has long been advocating. In his address before the American Petroleum Institute in 1923, Mr. Bedford said:

"I come here to plead for cooperation. We saw what cooperation could do for the industry during the war; cooperation in the full light of day; cooperation in partnership with all Government agencies; cooperation along with proper competition.

"I now urge closer cooperation and more united action within the industry, and yet I do not advocate a closer cooperation of any particular group or division. I urge general cooperation embracing every unit, large and small, engaged in any of our varied activities.

"The period of greatest growth and expansion in the oil industry has been in an era which witnessed the birth almost daily of new competitors and of almost phenomenal development of the power and strength of new units in the industry. That was due to the fact that the uses and consumption of petroleum products were multiplying so rapidly that any undertaking soundly established and efficiently conducted would sooner or later perforce find a place in the world's petroleum markets. There should be, therefore, no need for the kind of rivalry which has sometimes resulted in the humiliation of the industry itself."

The oil board is composed of the Secretaries of War, Navy, Interior and Commerce, four cabinet officers, which stamps it as entirely unique. It will investigate fundamental problems, and will be in contrast to sensational investigations of the past. As several oil men have pointed out the oil question is taken out of the hands of La Follette and the Federal Trade Commission, and this alone is an encouraging sign. The position of the Government, as aiding, in the interests of the consumers themselves, the stabilization of the petroleu mindustry is interesting and unusual. It reveals President Coolidge's appreciation that some of the industry's problems are peculiar to the industry and suggests to him the desirability of meeting them with new methods.

Cooperation With Oil Board.

The industry is asked to cooperate with the board at the meeting of directors of the American Petroleum Institute held this month, a committee was appointed to collect data and secure industry cooperation so that the institute can lend effective cooperation to the oil board in connection with its investigation. The committee comprises J. Edgar Pew, vice president, Sun Oil Co., and president American Petroleum Institute, and R. L. Welch, general secretary and counsel, American Petroleum Institute, dent, Standard Oil Co. (California); D. dent, Standard Oil Co. (California), D. M. Folsom, California Petroleum Corp.; W. S. Farish, president Humble Oil & Refining Co.; E. W. Marland president Marland Oil Co.; W. N. Davis, president Mid-Continent Oil & Gas Association; George S. Davison, president Gulf Refining Co.; J. C. Donnell, president Ohio Oil Co.; E. T. Wilson, president Mutual Oil Co., and Frank Haskell, vice president Tide Water Oil Co.

Secretary of the Interior Work, chairman of the oil board, in a questionnaire sent to 20 oil companies, stated that under the instruction of the President, the board invites the full cooperation of the oil industry in studying the complex problem presented by the present situation. The members of the board feel their full responsibility in matters of national security and industriay prosperity, he says, but realize also the large interest felt by representatives of the oil industry. Because their responsibilities have much in common, cooperative effort, he states, is highly desirable. He adds that the primary object of this study under Government auspices is elimination of waste.

Through the committee of 11, the American Petroleum Institute will conduct an exhaustive investigation into every phase of the petroleum industry and will probably trace developments from the drilling of the Drake well. One particular phase of this work will undoubtedly be the determination of actual and economic waste in the industry. It is expected that the investigation will consume several months.

While it is apparent that the Federal Oil Conservation Board desires to get its investigation under way at the earliest possible time, the matter is of such importance that its consideration will consume a good many months.

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GASOLINE PRODUCTION DURING YEARS 1923-1924

(Continued from Page 179)

gasoline production increased. Bearing in mind the stored crude in California we can expect that her crude oil curve and gasoline curve will not travel together in 1925.

Texas the Big Surprise

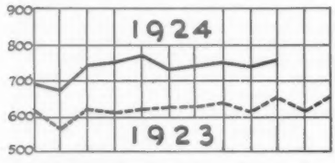
Texas has easily been the gasoline surprise of 1924— and it is easily conceivable that with the "shift" in the sources of crude that is sure to come in 1925, the four major gasoline producing areas will be East Coast, Texas, Oklahoma, Kansas and California—and possibly with the first two reversed.

In any event, the time has come when Texas, with over 50 per cent of the crude oil of the United States directly behind her and the markets of the world directly in front of her, will "come into her own" as one among the greatest refining areas of the world—and this regardless of the volume of oil that may come from South America.

Nothing could more clearly emphasize the "unstrategic" position of Oklahoma-Kansas—the greatest light oil producing area in the world—than the curve for 1923 on the accompanying graph. With Oklahoma-Kansas producing 189,000,000 bbls. of oil in 1923 against 131,000,000 in Texas, and with Oklahoma-Kansas producing 1,255,000,000 gallons of gasoline against 1,221,000,000 gallons in Texas, the economic effect of the "inland" position of Oklahoma-Kansas is clearly emphasized.

In the first 10 months of 1924 Oklahoma-Kansas produced 164,000,000 bbls. of oil and 1,226,000,000 gallons of gasoline compared with 111,000,000 bbls. of oil and 1,403,000,000 gallons of gasoline by Texas. And while the gasoline situation in Oklahoma-Kansas is far better in 1924 than in 1923, the situation in Texas, from a purely production standpoint, is obviously expanding much more rapidly.

As indicated by the following graph



Monthly production of gasoline in the United States in millions of gallons

the production curve for the first 10 months of 1924 has followed rather closely the general lines of the curve for 1923.

The production for the first 10 months of 1923 was 6,279,000,000 gallons, compared with 7,396,000,000 gallons for the first 10 months of 1924—the increase in 1924 being almost 18 per cent. Applying a slightly less percentage of increase to the last two months of 1924, would give a total production for the year of over 8,700,000,000 gallons compared with 7,556,000,000 gallons in 1923.

The year 1924 has been essentially an "adjustment" year following the abnormal conditions resulting from 1923.

That the production curves for some of the areas have "traveled differently" in 1924 from 1923 only makes the fact more amazing that, in the aggregate, the gasoline production curve for the entire country has traveled very close to the demand curve, regardless of the direction traveled by the crude oil production curve.

Regardless of what happens to our crude oil production in 1925 we are seeing the year 1924 close with the gasoline curve pointing sharply upward and the crude oil curve pointing slightly downward.

And this is the first time, since 1906, that the crude oil production curve for the year has pointed downward.

WANTS ENGINEERS

The United States Civil Service Commission announces the following open competitive examination: Engineer (petroleum) $3,800; engineer (natural gas), $3,800; assistant engineer (petroleum), $2,400, and assistant engineer (natural gas), $2,400. Receipt of applications for the positions listed above will close February 24. These examinations are to fill vacancies in the Bureau of Mines, Department of the Interior, for duty at Washington, D. C., or elsewhere, at the entrance salaries shown above. Advancement in pay may be made without change in assignment up to $5,000 a year for engineers, and up to $3,000 a year for assistant engineers.

Full information and application blanks may be had from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of United States civil service examiners at the post office or customhouse in any city.

IRMA-WAINWRIGHT OPERATIONS IN 1924

(Continued from Page 261)

sidered. The elevation of the Imperial (Fabyan) well No. 1 is 2,040 while that of the Producers Syndicate well is 2,216. All strata in the Wainwright Producers Syndicate well should thus be 176 feet deeper below the surface than in the Imperial well, providing that the strike, as outlined above, holds. Although there are no outcrops near the Wainwright Producers Syndicate well the writer has data that seem to indicate the strike to be as stated, but he cannot make a final statement until the Wainwright Producers Syndicate furnishes him with a statement of their well log. Whether or not the strata under the Wainwright Producers Syndicate well are suitable to hold gas can only be told by testing with the drill; if gas flows of any volume are present they should be encountered between 1,880 feet to 1,900 feet and between 1,930 feet to 1,945 feet. This last corresponds in elevation to the large flow of gas in the Imperial (Fabyan) well.

While it is not the intention of this article to deal with the drilling program of the various companies, the coring done by British Petroleums in connection with the use of rotary drills has given so much valuable information that a statement of this may be of interest. One instance alone may be taken as sufficient to show the value of an accurate log. When No. 2 well was drilled nothing was known of the oil sands. Consequently to get as large a production as possible the drilling was carried through the oil sands. It was then found that bottom water had been encountered and in consequence No. 2 well will produce some water with the oil unless the water can be shut off. In drilling No. 4 well it was, of course, desirable to avoid reaching this water level and the question at once arose how far should this well be drilled to give the maximum production and yet avoid the water troubles. A core of the sand showed the exact conditions in the sand and the well was stopped above the water level. No. 4 is thus in good shape to produce oil without having the water troubles which are present in No. 2 well. Coring gave very accurate logs of both Nos. 3 and 4 wells, hence these can be correctly correlated and a great deal of valuable information on the position and character of the sand horizons is now known and should be of decided advantage to British Petroleums Co. in its further search for oil in this field.

SINCLAIR BOND ISSUE

NEW YORK, Jan. 24.—The first large oil financing arranged in many months, save for a $15,000,000 issue of bonds for the Sinclair Consolidated Oil Corp., in mid-November, was the announcement that The National City Co., Chase Securities Corp., Blair & Co., Inc., and the First Trust & Savings Bank of Chicago have purchased $50,000,000 of Sinclair Crude Oil Purchasing Co., three-year 6 per cent notes. Out of proceeds raised through the sale of the $50,000,000 of notes the Sinclair Crude Oil Purchasing

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Co. will redeem on or about February 17 next its $30,000,000 issue of three-year 5½ per cent gold notes, Series A, which are due April 15 next, and $20,000,000 of three-year 6 per cent gold notes, Series B, due February 15, 1926.

CRUDE PRICES CHANGE IN ALL THE OIL FIELDS

(Continued From Page 265)

Texas, area crude from 10 cents to 25 cents, depending on gravity. Indian Refining Co. reduced Western Kentucky crudes 25 cents. Imperial Oil, Ltd., reduced Canadian crudes 15 cents.

September 19.—Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 25 cents with exception of Mule Creek, Lost Soldier and Sunburst crudes, where no change was made. Humble Oil & Refining Co. reduced Wichita and Archer Counties (Texas) crudes 10 cents.

September 20.—Standard Oil Co. of Indiana reduced Homer, Haynesville, El Dorado, Bull Bayou, Bellevue, Crichton, and De Soto crudes 15 cents. Same company advanced Smackover below 24° gravity 15 cents.

September 23.—Atlantic Oil Producing Co. established a price of 90 cents for crude of 26° gravity and above and 70 cents for below 26° gravity.

September 24.—Standard Oil Co. of California established seven new schedules for high gravity crudes of Rosecrans Field beginning at 36° and extending through 42 gravity and above.

September 26.—The Texas Co. announced that it would buy all crude which it has stored to the account of producers in North and Central Texas and would make no storage charges provided the offer was accepted by October 10. The same company beginning this date is also paying for all its current crude runs.

September 27.—Prairie Oil & Gas Co. reduced all crude schedules below 36 degrees of gravity in North Texas, Oklahoma and Kansas 10 and 15 cents. The same company established new schedule for crude of 36° gravity or above for which it is paying $1.25. Major purchasing companies adopted same schedule with the exception of Magnolia Petroleum Co. and Humble Oil & Refining Co.

October 1.—The Paragon Development Co. reduced three grades of Western Kentucky crudes 10 cents.

October 2.—Joseph Seep Purchasing Agency reduced Corning crude 15 cents.

October 4.—Magnolia Petroleum Co. adopted the Prairie Oil & Gas Co. prices for Oklahoma, North Texas and Kansas for crude below 33° gravity. No change was made in its schedule above 33 degrees gravity.

October 6.—Standard Oil Co. of Louisiana adopted a two-gravity schedule for Smackover, Ark. crude.

October 8.—Standard Oil Co. of Louisiana reduced El Dorado, Ark. crudes 10 cents.

October 14.—Prairie Oil & Gas Co. announced that it would pay for all crude run to its account since October 1 and pay for oil stored to the account of producers since July 17, 1924, at present posted prices. No storage charge provided offer is accepted by October 31, 1924.

October 27.—Standard Oil Co. of Louisiana advanced Cotton Valley crude 15 cents.

November 6.—Major purchasing companies advanced Grade "A" Gulf Coast crude 25 cents and Grade "B" 20 cents. Indian Refining Co. advanced Western Kentucky crudes 10 cents.

November 12.—Standard Oil Co. of Louisiana advanced Bellevue crude 25 cents.

December 19.—Humble Oil & Refining Co. adopted Prairie Oil & Gas Co. schedule for Ranger, Texas, Field. Same company posted a price of $1.25 for Wortham, Texas, crude.

December 27.—The Joseph Seep Purchasing Agency advanced all grades of Pennsylvania crude 25 cents.

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MORGANS EXERCISE OPTION ON MARLAND

NEW YORK, Jan. 24.—J. P. Morgan & Co. have exercised part of their option to take over the capital stock of the Marland Oil Co. at $39 a share, an initial payment of $1 a share having been made to acquire 335,000 shares at that price.

According to announcement J. P. Morgan & Co. will take over 100,000 shares at the price mentioned and the Marland company on its own part will extend for another six months the option on the balance of the stock.

The funds derived from the sale, it was understood, would be used to accumulate crude oil at the present low prices in view of the expected upward trend.

THE BUREAU OF MINES ACTIVITIES IN 1924

(Continued From Page 144)

stallation of large scale equipment designed along the lines indicated by this investigation. The results of the work to date are quite encouraging, and no doubt will be found helpful in obtaining a greater yield of better products from petroleum.

Separation of Wax

It frequently happens that certain crudes are unsatisfactory for manufacturing lubricating oils by the present methods, because these crudes contain an excessive amount of wax that is not readily separated and passes through the plates of the filter presses, giving an oil that is practically worthless for the manufacture of lubricating oils. During the course of this research several phases have developed, which bid fair to be as important as the original problem.

At the outset it became necessary to develop and standardize some method by which the amount and quality of the wax in an oil wax mixture could be accurately determined. Clearly, one cannot determine the recovery of wax or the percentage unrecovered unless he knows how much wax was in the oil to start with. The methods in common use were empirical and proved unsatisfactory for this puurpose. The one developed and standardized makes use of the selective solvent properties of acetone and has been described in a publication by the bureau. A study of wax plant efficiency made possible by this method has given very surprising results. It was found that the efficiency of wax recovery in various large and well equipped refining establishments working from the same crude, varied from 1 to 200 per cent. Attention has been given to such factors as the thickness of wax cake, the rate of heating, and the length of the sweating period in the manufacture of wax. It has been found in some cases that a slight variation of the sweating conditions would mean a considerable increase in the yield of wax. It is planned to continue this work in an effort to establish the feasibility of applying experimental studies to large scale operations.

Transmission Losses of Gas

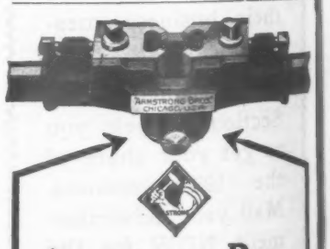
The advantages of natural gas as a fuel have enormously increased its consumption. The demand on our gas fields have been so great that it has become necessary in some regions to supplement this natural supply with manufactured gas. Men in the gas industry are therefore giving much attention to the conservation of gas by prevention of waste in its production and transmission. The Natural Gas Association of America and the Bureau of Mines have been working for the past two years on the problem of decreasing transmission losses of natural gas through the immense network of pipe lines necessary for the transportation of this gas from its source to the consumer. All are agreed that it would be a fine thing to eliminate all leakage of natural gas in transmission lines; but pipe lines are often many miles, sometimes hundreds of miles, in length and carry gas at high pressures. These pipe lines are laid in the ground, under streams or over them and through various conditions of rock, corrosive water and soil. It is, therefore, highly improbable that a system with no leakage will ever be obtained, but it should be approximated as closely as practicable.

In work of this kind it must be kept in mind that there is an economic limit beyond which the gas saved will not pay for the cost of conservation, therefore it is of the utmost importance that the cost of conservation shall be as low as possible, thus making its wide application a practical matter. The precise limit in any given system is dependent on many variables such as the length of the line, its age, the nature of the soil through which it is laid, the method used for connecting the various lengths and last, but by no means least, the price paid by the consumer for the gas. It is essential, however, to know how and where leakage is most likely to occur before ways and means can be developed for detecting and preventing it. At first glance this problem might appear quite simple, until one is reminded that the temperature and pressure of the gas entering these lines is entirely different than when it is delivered at the other end and moreover these factors vary at different points throughout the system. At the outset it became necessary to make a careful study of leakage through openings of various sizes and shapes. At first various sizes of small orifices were used. This work was then extended to small apertures as split joints, threaded couplings, welded joints, unions, and corroded pipe. Many important facts have been established, as, for instance, certain apertures in a pipe line will permit greater leakage at the same conditions of temperature and pressure after the pipe has been submitted to higher pressures. Methods have been worked out whereby the information thus obtained can be utilized for testing pipe lines. By this method it has already been possible to detect leakage in commercial pipe lines and to determine the source of the leaks so that they could be repaired at comparatively small expense.

Oil Shale Investigations

While the bulk of the petroleum activities of the bureau have been devoted to the petroleum industry we have not neglected entirely the possibility of obtaining oil from oil shals. Laboratory work with various types of retorts is in progress at Boulder, Colo., where the Bureau of Mines has been cooperating with the University of Colorado for some years. The information thus obtained and from time to time published, is of a fundamental character and will save much unnecessary construction and large scale experimentation when oil from this source becomes commercially important.

All of this research work in the various



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ramifications of the petroleum industry rests on the fundamental conception that it is a primary function of the Bureau of Mines to determine the fundamental factors essential to the solution of the various problems tackled and to apply these results to a sufficient number of cases to establish a reasonable confidence in their feasibility, develop a satisfactory technique for their application and to publish the results. It is then up to the operators and the engineers employed by them to apply these data, combined with their own research, to the particular operation for which they are responsible. Only in this way can the Nation receive a fair return on the money expended by it for such research.

YEAR'S WORK OF U. S. GEOLOGICAL SURVEY

(Continued From Page 168)

letters were answered. Areas amounting to 4,191 acres were formally classified as oil and gas land.

The Survey acts also as advisor in another capacity. In 1924 K. C. Heald and P. V. Roundy attended sales of leases of lands belonging to the Osage Indians of Oklahoma and advised concerning the adequacy of the bonus offered in each case.

In March, 1924, the director of the Survey was appointed by President Coolidge to serve on a commission to consider the best policy for insuring the future supply of fuel oil for the Navy; later, he was elected Chairman of this Commission. During the year the director and other members of the Survey have made public addresses and written articles urging the conservation of our petroleum resources.

As in years past, one of the most important services performed by the Bureau is the collection and publication of statistics on our mineral resources. Annual and monthly statements on petroleum and annual statements on gas, and natural gas gasoline not only give figures of production, consumption, imports and exports, but also analyze the statistics and point out their significance to producers and consumers.

Among the reports published during the year that relate more especially to oil and gas are the following:

Professional Paper 132-F. Relations of the Wasatch and Green River formations in northwestern Colorado and southwestern Wyoming.

Bulletin 729 (reprint). Oil shale of the Rocky Mountain region.

Bulletin 751-C. Geology and possible oil and gas resources of the faulted area south of the Bearpaw Mountains, Montana.

Bulletin 751-D. Geologic structure of San Juan Canyon and adjacent country, Utah.

Bulletin 751-G. Geology and oil and gas prospects of part of Moffat County, Colorado, and southern Sweetwater County, Wyoming.

Bulletin 753. Geology and oil resources of a part of Los Angeles and Ventura Counties, California.

Bulletin 756. Oil and gas fields of the Lost Soldier-Ferris district, Wyoming.

GENERAL DECLINE IN CENTRAL WEST IN 1924

(Continued From Page 116)

August	8	135	4	0	19
September	11	137	4	1	2
October	19	192	4	1	1
November	16	282	3	0	5
December	16	114	3	3	18
Total 1924	160	3,445	46	11	178
Total 1923	175	4,411	29	4	177
Difference	25	966	3	7	1

The above wells were distributed among the various counties as follows:

County—	Comp. Wells	Prod. Jay	Dry Gas	Old Wells Abd.
Adams	4	37	0	34
Grant	4	22	1	0
Huntington	1	0	1	0
Delaware	4	88	1	8
Randolph	4	25	2	7
Gibson	19	359	8	12
Pike	11	123	4	11
Sullivan	14	38	8	4
Knox	5	25	3	0
Parke	1	10	0	0
Newton	1	12	0	0
Cass	1	0	1	0
Clay	1	0	1	0

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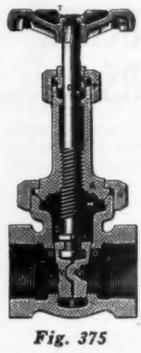

Fig. 375

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Decatur	1	0	0	1	0
Dubois	1	0	1	0	0
Spencer	1	2	0	0	0
Harrison	2	10	0	1	0
Laporte	2	0	2	0	0
Hendricks	1	0	1	0	0
Shelby	1	0	0	1	0
Hamilton	1	0	0	1	0
Total	150	3,445	46	11	178

Illinois

During the year 1924 the completed wells in the Illinois Field were as follows:

Month—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
January	2	35	1	0	6
February	4	110	1	0	6
March	5	6	3	0	0
April	9	107	3	0	1
May	17	657	6	0	9
June	24	735	5	0	8
July	15	457	2	2	8
August	26	964	4	0	7
September	21	588	6	0	1
October	31	597	10	0	4
November	14	595	6	0	4
December	15	328	8	0	3
Total 1924	173	5,079	55	2	57
Total 1923	260	5,014	94	18	36
Difference	93	65	39	16	21

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas	Old Wells Abd.
Clark	56	1,712	8	2	0
Cumberland	2	0	2	0	0
Crawford	22	58	8	0	3
Lawrence	11	97	2	0	33
Marion	6	190	2	0	12
Clinton	1	0	1	0	1
Monroe	5	80	2	0	0
Wabash	57	2,894	22	0	6
Coles	5	16	3	0	0
Jackson	2	30	0	0	0
Jefferson	1	0	1	0	0
Douglas	1	0	1	0	0
Fayette	1	0	1	0	0
Edgar	2	2	1	0	0
Washington	0	0	0	0	2
Madison	1	0	1	0	0
Total	173	5,079	55	2	57

EASTERNERS SOUGHT GAS RATHER THAN OIL

(Continued From Page 110)

equip a well, that the operator of small means would not take the chances.

Random Observations

Very little producing property changed hands during the year. Owing to the scarcity of new producing territory, operators were not inclined to part with their holdings, not knowing where to go in the eastern fields to develop new production. Another reason so little property changed ownership was the asking price was too high for the would-be investor. For settled production asking prices ranged from $3,000 to $8,000 a barrel, depending on the location and producing formation.

The southwest Pennsylvania, West Virginia and southeastern Ohio fields were free from casualties during the year. No great losses were sustained from visitations of lighting or other causes. There were a few minor accidents which were unfortunately attended with loss of life and property.

Not a Profitable Year

Taken as a whole the year was unprofitable for the producer in the eastern fields. However, he met the depression with fortitude and is not despondent as to the future of the industry. The old timer has passed through many depressions, but none that extended over a period of more than three years, such as he has just experienced.

The accompanying tables show by months the number of completions, the new production, dry holes and gas wells completed in the southwest Pennsylvania, West Virginia and southeast Ohio fields in 1924 and comparison and the result of operations in the same fields in 1923.

Completions by Months

Month—	Comp.	Prod.	Dry	Gas
January	153	367	35	74
February	118	270	33	38
March	160	472	33	66
April	192	1,067	41	72
May	189	894	43	57
June	196	1,060	43	66
July	211	1,197	49	52
August	213	1,740	48	70
September	197	1,488	42	71
October	193	1,273	36	60
November	189	852	39	61
December	201	1,314	48	72
Total	2,212	11,994	490	759

Completions by Districts

District—	Comp.	Prod.	Dry	Gas
Southwest Pennsylvania	204	387	43	103
West Virginia	1,062	3,422	218	522
Southeast Ohio	946	8,185	229	134
Total 1924	2,212	11,994	490	759
Total 1923	2,428	12,160	576	749
Difference	216	166	86	10

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PAST YEAR IN THE SOUTHERN STATES

(Continued From Page 114)

nessee, Mississippi, Alabama and Georgia, showing the completions by months and by counties:

Kentucky in 1924

Completions in both eastern and western divisions of the Kentucky fields for 1924 were by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	58	568	15	7
February	66	1,095	16	7
March	118	2,400	32	2
April	107	1,929	32	7
May	174	4,075	36	5
June	178	2,832	42	3
July	168	2,595	41	3
August	199	2,639	26	4
September	120	1,298	19	1
October	156	2,123	35	7
November	165	2,425	63	8
December	96	1,620	18	7
Total 1924	1,605	25,599	368	61
Total 1923	1,943	33,692	471	80
Difference	338	8,093	103	19

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry	Gas
Wayne	50	211	19	..
Powell	10	120	1	1
Estill	16	80	5	..
Lee-Owsley	141	3,488	10	13
Lawrence-Johnson	186	5,123	1	6
Johnson-Magoffin	153	1,353	2	4
Clinton	3	...	3	..
Elliott	23	161	5	..
Floyd	14	83	4	6
Morgan	8	8	3	4
Wolfe	12	239	4	..
Rowan	4	60	..	2
Menifee	3	10	2	..
Clay	2	...	2	..
Breathitt	1	...	..	1
Knott	2	...	..	2
Boyd	2	5	..	1
Martin	4	..	..	4
Flemming	1	5	..	..
Laurel	1	...	1	..
Allen	253	3,854	96	..
Barren	229	1,598	35	8
Warren	198	3,118	41	2
Cumberland-Monroe	120	4,453	75	..
Owensboro district	105	838	29	1
Simpson	17	346	5	..
Metcalf	11	61	5	3
Russell	10	171	2	..
Green	5	4	2	2
Hopkins	5	125	1	..
Hardin	3	...	3	..
Taylor	2	...	1	1
McLean	1	...	1	..
Henderson	1	...	1	..
Grayson	1	...	1	..
Adair	1	...	1	..
Marion	1	...	1	..
Todd	1	...	1	..
Owen	1	...	1	..
Logan	2	85	1	..
Edmonson	1	...	1	..
Larue	1	...	1	..
Total 1924	1,605	25,599	368	61

Tennessee

The Tennessee completions for 1924 were distributed by months as follows:

Month—	Comp.	Prod.	Dry	Gas
January	2	...	2	..
February	2	...	2	..
March	4	10	3	..
April	3	5	2	..
May	1	100	..	..
July	7	4	5	..
August	2	5	1	..
November	3	1,050	1	..
December	4	25	3	..
Total 1924	28	1,199	19	..
Total 1923	54	1,684	41	1
Difference	26	485	22	1

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry
Clay	19	1,149	11
Warren	2	...	2
Morgan	1	50	..
Davidson	1	...	1
Cheatham	1	...	1
Jackson	2	...	2
Hamilton	1	...	1
Shelby	1	...	1
Total 1924	28	1,199	19

Mississippi

The completed wells in Mississippi during the year 1924 were by months as follows:

Month—	Comp.	Prod.	Dry
January	1	...	1
February	1	...	1
July	3	...	3
August	1	...	1
Total 1924	6	6	6
Total 1923	13	12	1
Difference	7	6	5

The above wells were distributed among the various counties as follows:

County—	Comp.	Prod.	Dry
Pike	3	...	3
Chickasaw	1	...	1
Tishomingo	1	...	1
Tallahatchie	1	...	1
Total 1924	6	...	6

Very little work was accomplished in either Alabama or Georgia the past year, the only completion reported was drilled by the Spring Valley Oil & Development Co. on the Ligon farm near Sreffield in Colbert County, Alabama, and was abandoned at approximately 1,500 feet.

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CRUDE PRODUCTION IN 1925 TO BE 700,000,000 BBLS.

(Continued From Page 63)

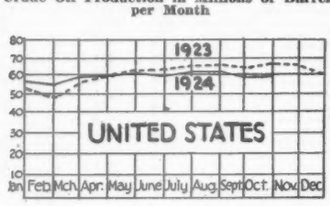
conditions, our domestic consumption should show an increase of about 8 per cent. This would bring it up to about 800,000,000 bbls. for 1925.

Using the foregoing estimates we can set up the following "Balance Sheet for 1925:"

Stock, January 1, 1925....	374,374,000
Domestic Production	700,000,000
Imports	80,000,000
	1,154,374,000
Exports	20,000,000
Domestic Consumption	800,000,000
Stock, December 31, 1925..	334,374,000
	1,154,374,000

This would mean that in 1925, even though we imported 80,000,000 barrels of mostly low gravity crude from Mexico and exported 20,000,000 barrels of Amer-

Crude Oil Production in Millions of Barrels per Month



Broken line represents 1923 and solid line represents 1924.

ican oil to foriegn countries, our supply of crude oil would be 40,000,000 barrels less than our demand—and that we would therefore draw on our stocks for 40,000,000 bbls.

With domestic consumption and exports totaling 820,000,000 bbls. for the year 1925, or an average of about 2,250,000 bbls. a day, the stock at the close of 1925 would be equal to about 147 days supply.

However, a stock of crude oil equivalent to 147 days supply would be a matter of small moment compared with the withdrawal of 40,000,000 bbls. from storage.

The psychological effect of drawing crude oil out of storage—the first time since 1918—would be far out of all proportion to either the amount drawn from storage or the amount remaining in storage.

And when we begin drawing oil from storage, month after month, the pendulum will start on a long swing "in the other direction"—the direction of very substantially higher prices for crude oil—and of prices for gasoline based, not on profit-killing competition, but on "essential values."

INVESTIGATIONS OF HEAT AND POWER OILS

(Continued From Page 148)

cal Survey and the Bureau of Mines, the United States Bureau of Standards has not been enabled to attack many important problems that should receive attention because of limited resources. That condition pertains to the present year and unless there is some concerted action on the part of industry generally it will continue. The action that is necessary to support these bureaus adequately is a proper representation of the needs of commerce and industry for an advancement of scientific knowledge which can only be brought to bear upon Congress by various organizations of business that are capable of appreciating the value of scientific research.

BOURQUE EXPECTS GOOD NATURAL GASOLINE YEAR

(Continued From Page 133)

and number than any made heretofore and that large shipments of gasoline will begin to move in May, an earlier period than for some years past. So thoroughly sold are the refiners on the necessity for continued supply of natural gasoline that

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many of them are taking no chance on their summer requirements, but are buying ahead, providing for the period of greatest demand. As this is written, the second week in January, the demand for Grades Double A, A, Double B and B is still firm and the prices range from 9¼ cents down to 8¼ cents on those grades. It is true that there is some Grade C going into storage but not enough to be a factor. The first of November, 1923, saw millions of gallons of gasoline in storage and tank cars were being utilized for storage purposes. With two months of cold weather already past and storage empty, all of which indications are, the demand will be firm throughout the current year.

KEROSENE RATE UNREASONABLE

WASHINGTON, Jan. 24.—The scope of the investigation instituted by the I. C. C. early in 1923 to determine the reasonableness of the charges of railroads for wharfage, handling, storage and other accessorial service at south Atlantic and Gulf ports at and south of Hampton Roads has been enlarged so as to include all Atlantic and Gulf ports. At the same time the commission expressed the opinion that the combined wharfage and handling charge on kerosene in cases, at New Orleans was unreasonable to the extent it exceeded 3.5 cents per 100 pounds.

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Alcohol as a motor fuel has recently been submitted to the British Government by a group of leading British motor interests. For such uses the alcohol would be denatured so effectively that it would be suitable for pouring into metal fuel tanks only. The Power Alcohol Association promises to put fuel alcohol on the British market within 10 years in sufficient quantities and at a sufficiently low price to enable it to compete with gasoline. Sugar beets are to be the source of the alcohol supply, and the Government has been asked to subsidize the raw material for a system of cooperative stills until the infant industry has become strong enough to stand on its own feet.

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STANDARD IN ARGENTINA

The Standard Oil Co. of New Jersey, according to a report in London, has applied to the Legislature of the Province of Sala, Argentina, for an oil concession in that province. The bill presented to Congress in 1913 to regulate the petroleum industry has not yet been reported by the corresponding committee. The basis of the law is to withhold a greater part if not the whole of oil-bearing territory as a State reserve on which concessions of areas not required for State exploitation would be granted on Government terms to companies of recognized financial and technical capacity.

VENANGO VETERAN DIES

OIL CITY, Pa., Jan. 24.—John Frye, aged 80 years, a pioneer oil man of Venango County, died at his home of pneumonia after a short illness. He was one of the oldest oil men of Venango County and for a number of years had been active in the oil fields as a drilling contractor.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE REPORT FOR NOVEMBER

Runs

Runs—	Month Bbls.	Daily Average
*Prairie Pipe Line Co...	3,420,000	114,000
Gulf Pipe Line Co.	1,064,870	35,496
Texas Pipe Line Co.	431,153	14,372
Magnolia Petroleum Co..	1,403,263	46,775
Empire Pipe Line Co....	862,974	28,766
Cosden Pipe Line Co. ..	898,154	29,938
*Sinclair Pipe Line Co..	1,155,000	38,500
*Other lines	8,910,000	297,000
Total November	18,145,414	604,847
Total October	18,625,365	600,818
Difference	479,951	4,029

Shipments—	Month Bbls.	Daily Average
*Prairie Pipe Line Co...	3,502,938	116,765
Gulf Pipe Line Co.	1,049,957	34,999
Texas Pipe Line Co.	728,430	24,281
Magnolia Petroleum Co. .	1,304,294	43,476
Empire Pipe Line Co...	839,133	27,971
Cosden Pipe Line Co....	1,084,176	36,139
*Sinclair Pipe Line Co...	2,238,583	74,769
*Other lines	8,910,000	297,000
Total November	19,657,511	655,250
Total October	19,296,116	622,456
Difference	361,395	32,794

Stocks

*Prairie Oil & Gas Co.	26,300,000
*Prairie Pipe Line Co.	2,000,000
Gulf P. L. Co. and Gypsy Oil Co.	9,685,659
The Texas Co.	5,405,472
Magnolia Petroleum Co.	9,574,125
Empire Pipe Line Co.	3,142,635
Cosden Pipe Line Co.	2,759,494
*Sinclair Crude Oil Purchasing Co.	29,000,000
Carter Oil Co.	17,388,427
Other lines	11,000,000
Total November	116,255,812
Total October	117,423,510
Difference	1,167,698

*Estimated. †Prairie shipments include Texas crude. Sinclair shipments include also Texas and Wyoming crude.

Note: Stocks do not include approximately 9,000,000 bbls. of crude held in storage on private tank farms and leases.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November.

	Oct. '24	Nov. '24
Nat. Transit	199,575.25	155,466.95
S. W. Pa. P. L.	90,883.89	76,738.81
Eureka P. L.	396,959.58	313,985.41
Buckeye P. L. (Macksburg)	288,639.76	249,515.67
Buckeye P. L. (Cleveland)	15,068.52	12,628.22
Buckeye P. L. (Lima, etc.)	145,498.29	110,393.15
Indiana P. L.	13,732.04	9,906.55
Cumberland P. L. ..	353,376.22	317,529.60
N. Y. Transit	19,341.15	15,690.46
Tidewater P. L.	145,975.11	114,304.20
Pure Oil P. L.	193,849.91	173,772.14
Emery P. L.	43,225.22	37,435.54
Indian Ref.	62,081.48	48,956.23
Paragon Dev.	37,082.21	38,440.19
Pittsburgh P. L.	8,975.04	6,584.73
Riggs	.....	7,103.24
Total	2,014,258.67	1,698,450.12
Daily average	64,976.08	56,281.67

Note—Indian Refining Co. also reported other receipts of 378,319.61 bbls. Paragon Refining Co. had other receipts of 110,767.16 bbls. Paragon Development Co. had other receipts of 3,790.55 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November.

*	Oct. '24	Nov. '24
Nat. Transit.	316,814.05	328,195.08
S. W. Pa. P. L.	314,267.16	76,738.81
Eureka P. L.	172,363.77	133,437.43
Buckeye P. L. (Macksburg)	100,388.72	79,776.94
Buckeye P. L. (Cleveland)	1,402.46	1,212.94
Buckeye P. L. (Lima, etc.)	400,601.18	605,811.51
Indiana P. L.	775,886.48	906,678.87
Cumberland P. L. ...	121,292.74	123,095.54
N. Y. Transit	521,646.52	770,271.02
Northern P. L.	136,838.32	128,548.46
Tidewater P. L.	156,746.09	116,150.08
Pure Oil P. L.	144,366.46	135,576.29
Emery P. L.	42,307.10	34,849.05
Paragon Ref.	93,965.35	110,767.16
Indian Ref.	477,162.81	450,627.79
Paragon Dev.	31,059.70	38,440.19
Pittsburgh P. L.	11,164.71	8,621.26
Riggs	.....	2,314.39
Total	3,818,263.62	4,272,010.39
Daily average	123,169.79	26,817.37

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November were as follows:

	Oct. 24	Nov. '24
Nat. Transit	1,058,840.27	1,022,658.64
S. W. Pa. P. L. ...	699,936.45	663,131.46
Eureka P. L.	1,884,227.94	133,437.43
Buckeye P. L. (Macksburg)	407,451.51	395,669.54
Buckeye P. L. (Cleveland)	53,051.35	65,129.15
Buckeye P. L. (Lima, etc.)	4,474,343.57	4,373,559.45
Indiana P. L.	643,838.15	601,629.59
Cumberland P. L. .	623,817.30	617,906.57
Southern P. L.	454,510.60	476,795.57
Crescent P. L.	58,247.53	58,213.43
N. Y. Transit	799,719.95	711,774.78
Northern P. L. ...	863,572.00	679,449.45
Pure Oil P. L.	371,999.94	404,853.15
Emery P. L.	7,444.98	9,770.82
Paragon Ref.	90,298.77	102,333.48
Indian Ref.	157,931.51	135,869.56
Paragon Dev.	8,649.08	9,416.32
Pittsburgh P. L. ..	6,180.23	4,168.88
Riggs	.....	765.27
Total	12,664,061.12	12,268,529.76
Increase	457,225.25	.....
Decrease	.....	395,531.36

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern pipe lines at the close of October and November, showing the gross stocks of the above fields:

	Oct. 24	Nov. '24
Pennsylvania	3,930,646.58	3,906,769.11
Lima	1,326,652.80	1,330,142.27
Kentucky	1,482,174.97	1,569,619.78
Mid-Continent	5,808,670.66	5,359,367.61
Illinois	116,916.11	102,630.99
Total	12,664,061.12	12,268,529.76

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1921	1922	1923	1924
January	64,460	67,702	75,790	62,638
February	70,054	75,096	71,092	68,024
March	68,555	78,531	76,592	68,721
April	65,036	75,462	75,614	71,058
May	65,466	77,592	77,365	63,942
June	62,438	76,193	77,593	63,230
July	59,486	76,435	71,879	64,208
August	64,888	79,387	76,910	59,942
September	60,110	78,512	72,368	62,930
October	57,688	77,209	76,256	64,976
November	58,479	75,313	70,762	56,282
December	61,000	73,361	69,271	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for past four years:

	1921	1922	1923	1924
January	116,550	119,792	171,067	145,518
February	76,736	111,362	164,219	148,732
March	84,168	137,753	165,487	147,098
April	101,015	127,068	170,751	147,611
May	100,253	127,840	177,102	134,997
June	105,037	137,638	173,598	143,010
July	97,096	137,782	168,330	124,187
August	101,652	153,275	142,766	123,120
September	117,440	158,761	137,266	127,325
October	105,728	165,345	134,597	123,170
November	121,803	165,677	131,426	124,400
December	104,022	172,861	145,909	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1922	1923	1924
January	16,297,858	14,040,567	12,907,202
February	17,009,293	14,028,437	11,844,008
March	16,877,927	13,873,146	10,906,783
April	16,777,842	13,737,576	10,922,742
May	16,948,962	13,815,622	11,335,209
June	16,810,169	14,541,265	11,644,304
July	16,660,286	14,645,594	12,062,261
August	16,235,229	14,770,539	12,221,676
September	16,228,545	14,803,444	12,306,838
October	15,767,746	14,504,111	12,664,061
November	15,171,972	14,157,726	.....
December	14,323,765	13,444,361	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1923—	Receipts	Shipments	Stocks
November	2,980.66	4,150.98	16,154.47
December	2,893.07	3,489.27	15,548.27
1924—			
January	2,942.19	8,641.71	9,848.75
February	2,151.78	1,936.55	10,073.98
March	3,398.78	1,716.28	11,756.48
April	3,311.84	2,066.78	13,001.54
May	3,036.50	5,338.21	10,699.83
June	3,188.21	407.01	13,481.13
July	3,067.74	9,334.39	13,214.56
August	2,901.36	6.21	16,109.71
December	2,893.07	3,489.27	15,548.27
October	3,342.40	1,880.50	14,590.33
November	2,700.13	4,862.89	12,427.56

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 1	2,166,838.43
Runs from wells	623,668.96
Other receipts	120,119.63
Regular deliveries	503,186.50
Other deliveries	340,472.56

The amount of Illinois oil run by the Tidewater Pipe Line Co. in November was 26,478.68 bbls., and deliveries were 18,275.71 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries from the Illinois Field as follows:

1923—	Runs	Deliveries
November	546,359.43	286,692.69
December	534,186.04	302,543.61
1924—		
January	493,337.26	280,793.80
February	586,490.70	353,613.16
March	611,289.36	369,542.61
April	514,356.43	339,546.10
May	751,080.44	510,414.62
June	725,060.87	528,403.31
July	759,546.84	552,356.50
August	720,457.72	519,326.73
September	714,575.36	535,762.80
October	741,767.42	543,863.77
November	650,147.63	521,459.31

The Tidewater Pipe Co., Ltd., also delivered in November 317,162.27 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 451,585.06 bbls.

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
July	37,710	16,139	473,516	84,452	42,452	654,349	.....	16,936	.....	.....	.....	671,284
August	114,032	33,419	654,287	71,506	33,571	907,515	907,515	.....	6,774	.....	.....	914,289
September	67,670	34,531	638,617	76,300	18,900	836,018	.....	.....	.....	.....	.....	836,018
October	85,379	49,000	527,948	85,602	36,127	784,056	.....	.....	.....	.....	.....	784,056

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
May	156,485	134,602	288,903	59,613	300,097	939,699	316,679	295,358	199,591	36,164	848,792	1,788,491
June	120,169	108,731	434,931	68,131	239,400	971,362	412,741	251,762	159,831	23,831	858,165	1,829,527
July	62,097	81,291	445,067	38,418	277,970	904,843	320,194	273,455	130,739	34,978	759,361	1,664,204
August	80,839	67,356	247,710	98,903	207,065	691,873	370,549	238,677	115,839	14,677	739,742	1,431,614
September	101,969	45,028	193,200	77,000	204,869	632,066	255,329	315,000	141,170	20,300	731,799	1,363,865
October	136,826	67,515	257,418	90,818	113,127	665,704	231,903	268,616	111,097	29,351	640,967	1,306,671

GROSS PRODUCTION AND DAILY AVERAGE IN THE UNITED STATES FOR 12 MONTHS

1923—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming-Montana	Other Fields	Total
December:	Month	21,899,247	12,282,359	10,068,856	2,346,150	4,017,850	1,919,574	3,804,328	3,147,813	58,932,974
	Daily average	706,427	394,589	324,705	75,650	129,608	61,922	106,591	101,542	1,901,036
1924—										
January:	Month	20,912,500	12,292,833	10,336,643	2,223,878	3,686,680	1,601,175	4,636,230	2,950,500	58,640,439
	Daily average	674,597	396,543	333,449	71,738	118,925	51,651	149,556	95,177	1,891,637
February:	Month	19,341,226	13,236,637	10,495,486	2,112,853	3,302,750	1,497,450	4,168,450	2,997,700	56,152,553
	Daily average	666,939	421,953	361,913	72,857	113,888	51,629	143,740	103,369	1,936,295
March:	Month	19,913,262	13,236,851	12,077,617	2,206,425	3,882,695	1,701,593	3,993,890	3,256,000	60,270,333
	Daily average	642,362	430,221	389,601	71,175	125,248	54,890	128,835	105,097	1,947,493
April:	Month	19,299,849	13,462,240	11,725,830	2,265,090	4,068,225	1,495,582	3,901,755	3,231,000	59,439,571
	Daily average	643,328	448,408	390,861	75,503	135,608	49,853	130,058	107,700	1,981,319
May:	Month	19,833,576	14,243,057	11,922,316	2,486,696	4,659,117	1,596,791	4,033,564	3,255,000	62,126,627
	Daily average	639,793	459,615	384,623	80,216	150,291	51,507	130,109	105,226	2,004,065
June:	Month	18,807,999	14,457,390	11,515,020	2,473,320	4,756,443	1,811,880	3,798,834	3,211,500	60,632,388
	Daily average	626,933	481,913	383,834	82,444	158,548	60,419	126,631	107,050	2,027,723
July:	Month	19,274,755	15,191,860	11,830,889	2,678,834	4,598,160	1,931,641	3,738,525	3,287,990	63,512,654
	Daily average	621,766	490,060	381,319	86,414	148,321	62,311	120,275	109,290	2,049,389
August:	Month	19,112,998	16,572,104	11,805,752	2,717,398	4,400,116	1,898,246	3,816,627	3,280,017	63,603,269
	Daily average	616,548	534,584	380,831	87,658	141,810	61,234	123,117	105,807	2,051,713
September:	Month	18,308,233	16,299,030	10,670,640	2,688,690	4,022,025	1,811,985	3,437,455	3,305,700	60,533,758
	Daily average	610,274	543,301	355,688	89,623	134,068	60,396	114,249	110,190	2,017,793
October:	Month	18,696,565	16,153,604	10,985,315	2,769,319	3,876,558	1,878,941	3,053,810	3,472,031	60,885,665
	Daily average	603,115	521,084	354,365	89,349	125,018	60,611	98,510	112,001	1,964,053
November:	Month	17,767,034	15,955,630	10,805,039	2,597,432	3,748,440	1,749,480	2,950,605	3,004,950	58,478,610
	Daily average	592,234	531,854	360,168	86,581	124,948	58,316	98,020	100,165	1,949,287
Total 12 months		233,176,344	172,428,485	134,227,404	29,565,585	49,018,060	20,894,248	44,713,881	38,602,200	922,626,207

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